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PROGNOSIS IN HEART DISEASE WITH SPECIAL REFERENCE TO CORONARY DISEASE*

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Prognosis is one of the most fascinating phases of medicine. It may be defined as the balancing of probabilities in which all essentials bearing on the subject must be carefully analyzed and their relative importance weighed before a verdict is pronounced. It requires broad experience, knowledge of medicine in general, sense of proportion and the instinct to measure the abstruse. The patient's age, sex, occupation, familial tendencies, the objective signs of disease, those treacherous but significant subjective complaints indicative of derangement of function and the etiology of the lesion must all receive due thought and deliberation.

The estimation of the expectation of life in a given case of heart disease is often difficult and even after due consideration of all the available facts and an attempt to correlate the symptoms and the findings in their proper order, an accurate conclusion is not easily attained. The patient usually seeks medical counsel with such implicit confidence that the opinion given him may entirely alter his future life. It is regrettable that too often an irrelevant symptom or sign is misinterpreted during the medical appraisal and results in the patient's unnecessary invalidism and great mental unrest. Many cases of cardiac neurosis are directly attributable to diagnostic error and to unwarranted medical pessimism. Likewise, some subtle but ominous symptom or sign of serious disease may be lightly dismissed and be directly responsible for an unnecessary or a premature catastrophe.

Intelligent prognosis is, of course, impossible without accurate diagnosis. A single examination, regardless of its thoroughness and completeness, is often an insufficient basis for either an accurate diagnosis or an intelligent prognosis. The patient's age at the onset of the disease has an important bearing on prognosis. Cardiac infections are notoriously prevalent in young persons, being largely limited to the first three decades of life when rheumatic fever, chorea, tonsillitis, and the acute exanthemas are common etiologic agents. Most patients in the middle and later decades suffer from degenerative heart disease, such as results from arteriosclerosis, hypertension, exophthalmic goiter and adenomatous goiter with hyperthyroidism. Syphilitic cardiovascular disease is most common in the fourth and fifth decades, owing to the fact that about nineteen years elapse from the time of infection until the appearance of symptoms and signs of circulatory damage.

The length of time elapsing between the initial cardiac insult and the careful appraisal of the cardiovascular system and institution of a correct remedial regimen is a vital factor in determining the patient's life expectancy. Ordinarily life expectancy of women with cardiac disease is probably greater than that of men, because women, as a group, are subject to lesser occupational stresses and more readily and completely adapt themselves to their physical handicap. Cardiac infections are more prevalent among females, while degenerative cardiovascular disease is more prevalent among males.

Occupation is an important factor in influencing prognosis, and patients who have cardiac disease, and whose daily routine subjects them to strenuous physical strain and stress, do not, as a rule, have a life expectancy comparable to that of others performing light and less arduous duties. It is always important for those afflicted with heart disease to obtain sedentary employment in which the ordinary hazards of cardiac disease are minimal, and the responsibility for advising this belongs to the physician. It is becoming more and more difficult for patients to carry out this plan as competition in the sedentary fields is extremely keen, and many of the larger institutions give preference to healthy persons through the selective medium of physical examination.

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One is repeatedly impressed and even surprised by the familial tendency of heart disease, particularly of the degenerative types. There is probably no scientific reason for assuming that the disease is hereditary but it is probable that poor eugenics may result in the propagation of cardiovascular systems that are fundamentally lacking in quality and thereby less tolerant to the ravages of life. Temperament is undoubtedly an important factor in influencing cardiac disease, particularly as it affects the patient's manner of living, and is unquestionably a heritage.

The status of the heart, as determined by careful physical examination, affords significant information regarding prognosis. The degree of efficiency and the integrity of the diseased heart are directly dependent on the condition of the myocardium. The size of the heart is an important prognostic sign, for marked enlargement, particularly if dilatation exceeds hypertrophy, frequently ushers in severe heart failure. The significance of recurrent attacks of heart failure, especially if they are unprovoked, is extremely grave, and opinion is unreliable if the patient is seen for the first time during an attack. It is important to realize that the agents responsible for the heart failure are those that cause death, namely, infection, degenerative processes, alterations in cardiac rhythm, and toxemia.

Murmurs are significant signs in the diagnosis of various types of lesions, but do not merit the emphasis that has been accorded them in the past. It is not so long since the presence of a murmur was considered sufficient reason, regardless of its character, time, or location, for a diagnosis of organic disease of the heart. Murmurs are frequently evanescent, particularly those accompanying marked degrees of anemia and the increase in the rate of circulation seen in hyperthyroidism, pyrexia, and so forth. The murmurs that are now recognized as being of greatest diagnostic significance are the diastolic murmurs of mitral stenosis and aortic insufficiency. The murmurs themselves do not, of course, augment the lesion, but, when considered in conjunction with other symptoms and signs, they do throw light on the condition of the myocardium and the valves.

Gallop rhythm, and heart tones that are distant and lack definition and differentiation are important signs, for they indicate a marked degree of myocardial fatigue.

Pulsus alternans is always a grave prognostic sign and is usually soon followed by death; 74 per cent of White's series of patients died within a period of three years.

Cardiac arrhythmia in itself does not necessarily increase the seriousness of the prognosis, but it often occurs when the heart disease is well advanced, particularly in cases of auricular fibrillation, one of the most common and important disorders of cardiac rhythm. In a group of 500 patients with auricular fibrillation at the Mayo Clinic,[12] 41 per cent died from heart disease about fifteen months after examination. White, in a study of 100 cases of auricular fibrillation found the cardiac mortality to be 48 per cent. MacIlwaine and Campbell reported a mortality of 68 per cent twelve months after the patient had been observed in the Royal Victoria Hospital in Belfast. Pardee attributes the high mortality not to the arrhythmia but largely to the omission of treatment immediately after recovery from an attack of acute heart failure.

Premature contractions, or extrasystoles themselves, do not affect prognosis except as they occur in conjunction with serious disease of the heart. They are common in perfectly normal hearts.

The prognosis in cases of complete heart-block, particularly if associated with Adams-Stokes' attacks, is as a rule unfavorable. White and Viko noted a 50 per cent cardiac mortality in a group of twenty-four cases observed over a period of from one to seven years. Seven patients died within a year after the discovery of the complete block. In a series of thirty-seven cases at the Mayo Clinic,[13] the cardiac mortality was 68 per cent, an average of seven months after examination. Of the patients with Adams-Stokes' attacks, 73 per cent have died from heart disease.

With greater experience in which the trend of various pathologic processes has been revealed the etiology of the cardiac lesion has probably become one of the most significant prognostic factors. We no longer classify our cases as mitral insufficiency or chronic myocarditis but classify them according to etiology before venturing a prognosis.

It is well known that a wide range exists in the mortality in the different types of cardiac disease. In general, the degenerative types of cardiac disease carry the highest mortality, owing to the fact that the patients are older, that the

cardiac lesion is so frequently but a part of a more or less generalized pathologic process, and that the underlying disease is progressive. This is particularly true of the hypertensive and arteriosclerotic types of heart disease.

Electrocardiography is a very important adjunct in the evaluation of life expectancy.[14] Abnormalities are not infrequently discovered that have not been revealed by other methods of physical examination. I wish particularly to stress the significance of disease of the coronary arteries, as it so frequently is a lion masquerading in the guise of a lamb. It is beyond doubt the most treacherous of all the cardiopathies.

Many physicians regard the terms coronary sclerosis and angina pectoris as synonymous, yet a recent careful clinical and pathologic study of a large series of cases of coronary sclerosis[15] revealed the fact that only 30 per cent of the cases were attended by anginal attacks. Before discussing the prognosis of angina pectoris it is necessary to define my interpretation of this term, as it is used to denote different conditions. Certain physicians use it to designate a definite disease with a train of clinical symptoms and characteristic pathologic lesions, while others use it to designate a syndrome that may occur in many diseases. The prognosis of angina pectoris will obviously differ greatly according to the conception adopted.

The world owes a debt of gratitude to Heberden for his accurate description of angina pectoris, which was published in 1768. I shall quote from his original article: "There is a disorder of the breast marked with strong and peculiar symptoms, considerable for the kind of danger belonging to it, and not extremely rare, which deserves to be mentioned more at length. The seat of it, and sense of strangling and anxiety with which it is attended, may make it not improperly be called angina pectoris.

"They who are afflicted with it, are seized while they are walking, (more especially if it be up hill, and soon after eating) with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life, if it were to increase or to continue; but the moment they stand still, all this uneasiness vanishes.

"In all other respects the patients are, at the beginning of this disorder, perfectly well, and in particular have no shortness of breath, from which it is totally different. The pain is sometimes situated in the upper part, sometimes in the middle, sometimes at the bottom of the os sterni, and often more inclined to the left than to the right side."

As time elapsed other observers added to and subtracted from Heberden's classical description and the term false or pseudo angina was, unfortunately, introduced into medical literature. This term means absolutely nothing. Ultimately a subdivision was made and the terms hysterical angina, toxic angina and vasomotor angina led to such a jumble of types that the true issue was almost hopelessly submerged. During the last decade, however, some degree of order has succeeded the chaotic state, chiefly through the teachings of Mackenzie and Allbutt. While they were not in agreement as to the anatomic lesions responsible for angina pectoris, they both attempted to revive the original definition of Heberden and to restrict the use of the term to the disease which he so clearly described. The diagnosis of angina pectoris does not present greater problems than those encountered in any disease, in fact they are often much less perplexing, and it is absolutely essential to abolish irrevocably such terms as false or pseudo angina pectoris. There is no more justification for such a term than for pseudo carcinoma of the stomach.

Jenner was the first to associate angina pectoris with disease of the coronary arteries, while Huchard believed that disease of the coronaries or the aorta, particularly if the coronary orifices were encroached on, was the anatomic cause. More recently Allbutt brought forth his concept that angina pectoris is due to disease of the thoracic aorta, particularly of the root of the aorta and with involvement especially of its outer investment. He even stated that the coronary arteries and the myocardium had nothing to do with the pain of angina pectoris. Contrary to this view, Mackenzie held that in angina the symptoms were produced by exhaustion of the muscle of the heart and he emphasized the importance of coronary and myocardial disease.

In carefully analyzing these opinions and adding to them a personal experience based on clinical and pathologic correlations, it is impossible to relinquish the hypothesis of coronary disease in the production of angina pectoris. This view is particularly strengthened by a consideration of the characteristic syndrome that ensues following the sudden occlusion of a coronary vessel. Mackenzie's theory of the production of cardiac

pain has great breadth and perspective and is in fact the only theory submitted thus far that will explain cardiac pain under all known pathologic conditions.

The prognosis in cases of angina pectoris is grave and extremely uncertain. The outlook, essentially, depends on the integrity of the myocardium and the status of the general arterial system. The prognosis depends, to an appreciable degree, on the coöperation given by the patient, who must prepare himself to live on the level of his damaged heart.

Statistical studies of cardiac mortality are important but they are often inadequate and misleading when applied to the individual patient. Death from angina pectoris may occur in several ways. It may occur suddenly in the first attack, without antecedent symptoms. Such deaths are still quite universally attributed to "acute indigestion" and "ptomain poisoning," while in reality they are usually the result of acute coronary obstruction due to embolism or thrombosis. Death may result from progressive myocardial failure after several months or years of anginal attacks and not infrequently the terminal picture is that of congestive heart failure. The attacks of angina pectoris may cease, only to be supplanted by paroxysmal seizures of severe dyspnea, finally resulting in death from myocardial failure. Occasionally the anginal attacks cease spontaneously and death occurs from some disease unrelated to the cardiovascular system.

A general idea of the cardiac mortality in angina pectoris is shown by the fact that 47 per cent of a series of patients had died during a period of five years.[16] In another group[17] in which the data were based chiefly on necropsy records it was found that in known cases of angina pectoris, death had occurred suddenly in 83 per cent.

Besides the cases of coronary sclerosis exhibiting attacks of angina pectoris there are two other important types. In about 40 per cent of the cases the syndrome of progressive myocardial failure occurs, manifested in the milder forms by exertion dyspnea, and in the more severe forms by congestive heart failure. These cases have been, and still are, to a certain extent, diagnosed as chronic myocarditis, which is obviously incorrect since the pathologic process is not inflammatory in nature but the result of chronic and usually progressive impairment of circulation of the myocardium. As a group, these cases show less marked sclerosis of the coronary vessels with much less tendency to obliteration of the lumen than do those attended by anginal seizures. Two factors apparently definitely influence the myocardium in coronary sclerosis, first, the degree of arterial obliteration, and second, the length of time that the circulatory impairment has existed. Sudden death and death from gradual cardiac failure occur about equally in this group of cases.

The other form of coronary sclerosis is one that should receive our closest attention. It occurs in about 30 per cent of the cases and discloses little or no diagnostic evidence of its presence. For want of a better term we have come to refer to this form as occult coronary sclerosis.

These cases have been identified by the pathologist. Osler called attention to them in his statement that a certain proportion of patients have clear-cut heart sounds, a good pulse, and no obvious signs of cardiac disease, yet the coronary arteries may be extensively diseased. Patients with this form of the disease are largely in the later decades of life with outstanding complaints referable to other parts of the body, such as nephritis, diabetes mellitus, carcinoma, hepatic cirrhosis, and prostatic hypertrophy. It may be that the physician is overzealous regarding the patient's outstanding disease and is somewhat negligent in his appraisal of the body as a whole. Notwithstanding this fact, it behooves all of us to be ever alert in our search for coronary sclerosis in patients in middle and later life.

The electrocardiogram is most helpful in the diagnosis of coronary sclerosis. Significant abnormalities are disclosed in 70 per cent of the cases. I shall not attempt to discuss this phase of the subject here as it is beyond the scope of this paper. I believe that the time is rapidly approaching when all insurance companies will resort to electrocardiographic examinations as a routine procedure in the examination of certain types of applicants. I refer particularly to the middle-aged who seek insurance and those who apply for policies involving large sums of money. Not infrequently it is necessary for me to testify in cases in which the diagnosis of coronary sclerosis has been made and large policies have been granted but a relatively short time before death. Among these cases are many instances of delib-

erate misrepresentation while in others the applicant unquestionably has been unaware of his trouble. Electrocardiographic examination would have rejected irrevocably the majority of these applicants.

Sudden occlusion of a branch of the coronary artery due to embolism or thrombosis is not rare during the course of disease of the coronary arteries. Such an accident may be the first intimation of disease, although more often it occurs in known cases of angina pectoris. Its recognition is important, for the resulting symptoms may simulate acute surgical abdominal lesions.

As the result of sudden obstruction of a branch of the coronary system due to thrombosis or embolism, an anemic infarct occurs, which may be small or large depending on the size of the vessel occluded. If the area is small and is not in a vital portion of the heart, repair by fibrosis occurs and a small area of scar tissue results which may not permanently impair myocardial function. If, however, a large area of myocardial softening occurs, death soon ensues, or, if the heart has withstood the immediate insult, serious myocardial insufficiency may result, or true ventricular aneurysms may develop at the point of infarction and eventually lead to rupture of the heart.

A definite syndrome usually attends acute coronary closure. The onset of the attack is usually sudden and consists of excruciating retrosternal or upper abdominal pain, with or without the usual radiation so typical of angina pectoris. The pain is usually severe for from several hours to several days. The protracted duration of the attacks is one of the important points in distinguishing acute coronary occlusion from simulating conditions. The patient, as a rule, is in profound shock, with ashen facies denoting great suffering and anxiety, cold perspiration and clammy extremities. Respirations are shallow and rapid, the pulse thready and the blood pressure low. Fever, often attaining 100° to 102°, may be present within twenty-four hours.

Physical examination, soon after the onset of the accident, may reveal only weak, rapid heart tones. Often within eighteen or twenty-four hours a distinct pericardial rub is audible, usually to and fro in character, due to the inflammatory reaction of the visceral pericardium overlying the infarcted area. If the infarct is large, the area of cardiac dulness will increase, owing to the weakening of the myocardium. The upper abdomen may be distinctly resistant and almost rigid on palpation, falsely pointing to disease of the upper abdomen.

The leukocyte counts vary from 9,000 to 25,000 and in more than half the cases vary from 15,000 to 20,000. The differential leukocyte count usually shows the polymorphonuclear cells to comprise from 80 to 90 per cent of the cellular elements. Leukocytosis, within two hours after the onset of the attack, may be as high as 20,000. Libman has shown that, when the leukocytosis does not definitely recede within a few days, or if it increases with or without a preliminary decrease and there is no complication to explain it, progressive necrosis or intraventricular thrombosis, or both, are present.

About half the patients with coronary thrombosis and embolism die at the time of the attack or within a few days, while those who survive the immediate effects of the accident live from a few months to several years with varying degrees of cardiac handicap.

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RECENT OBSERVATIONS ON SCARLET FEVER

The new method of treating scarlet fever patients by the administration of a suitable antitoxin has presented a problem in relation to the development of protection against the disease. A study in the New Haven Hospital of late immunity developed by former patients who were treated with scarlet fever antitoxin and those who did not receive antitoxin indicates that there may be some disadvantage in the therapeutic dosage with the antitoxin in respect to the establishment of a more lasting immunity. It may turn out that the combating of the actual disease decreases the security that an attack of scarlet fever almost invariably promoted in former days. Nicholls at Yale has demonstrated the presence of *Streptococcus scarlatinae* in a proportion of persons who exhibited features of infection with hemolytic streptococci without evidences of clinical scarlet fever, thus showing that an existing immunity to the soluble toxin of *Streptococcus scarlatinae* does not prevent the development of local pyogenic infections with this organism. Persons so infected may serve as foci for the spread of scarlet fever. Trask of Yale urges that a large excess of antitoxin be used for therapeutic purposes to obtain consistently satisfactory results. In late cases with faded rash, little or no benefit may be expected from antitoxin therapy. Septic complications may continue when the specific toxemia and its attendant rash have terminated, thus suggesting that *Streptococcus scarlatinae* may have two different modes of attack and thus result in different clinical pictures of the disease. (Jour. A. M. A., March 26, 1927, p. 1004.)

ASTHMOLYSIN

According to the advertising, Asthmolysin is "a combination of the suprarenal and pituitary hormones in distinct proportions" which is prepared by a "special method." The use of pituitary in bronchial asthma is contraindicated. While epinephrine is used with advantage in some forms of asthma, there does not appear to be any reason why physicians should use a secret preparation containing an undetermined amount of it, when accuracy of dosage and therapeutic effectiveness may be obtained by the use of the pharmacopeial product. (Jour. A. M. A. March 12, 1927, p. 858.)

RETROPERITONEAL LIPOMA: A REPORT OF THREE CASES*

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Benign retroperitoneal tumor is often diagnosed ascites, ovarian cyst, and occasionally inoperable malignant growth. One or two cases have been diagnosed tuberculous peritonitis.

About 200 cases of retroperitoneal tumor have been reported in the literature. Von Wahlendorf reviewed 165 of these up to 1921, and Lecène reported 119. These cases no doubt overlap. Von Wahlendorf's series apparently included the cases reported by Lecène. Masson and Horgan reported twelve cases from the Mayo Clinic in 1921. Hirsch and Wells reported one case; this tumor was perhaps the largest one recorded, weighing 69 pounds. It was not removed ante mortem. Johnson, Holmes and Krogius have each reported one case. Krogius believes that the tumors are of mesenchymal origin and that they contain varying forms of connective tissue. He recommends that they be removed through a posterior incision the same as a tumor of the kidney. A great many retroperitoneal tumors cause symmetric abdominal enlargement; the tumor being rather soft probably accounts for the not infrequent diagnosis of ascites due to malignancy or peritonitis. Occasionally a small area of the tumor undergoes degeneration and causes marked elevation in temperature; in such case tuberculous peritonitis is a probable diagnosis.

Retroperitoneal lipomas usually grow slowly and may attain considerable size before they are noticed by the patient. They rarely cause pain and the patient seeks relief only when pressure symptoms develop.

The symptoms are variable. In the twelve cases reported by Masson and Horgan six of the patients first noticed a sensation of pressure in the abdomen. Six patients complained of slight intermittent abdominal pain and two of severe rather constant pain in the lower lumbar region. Six complained of qualitative food distress and occasionally vomited. Five complained of con-

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stipation, and six had lost weight. In the cases in which areas of the tumor have undergone degeneration, the symptoms are usually acute, namely fever, localized tenderness and an increase in the number of leukocytes.

The records of the Mayo Clinic show that twenty-two patients with retroperitoneal lipoma have been operated on since 1910 with removal

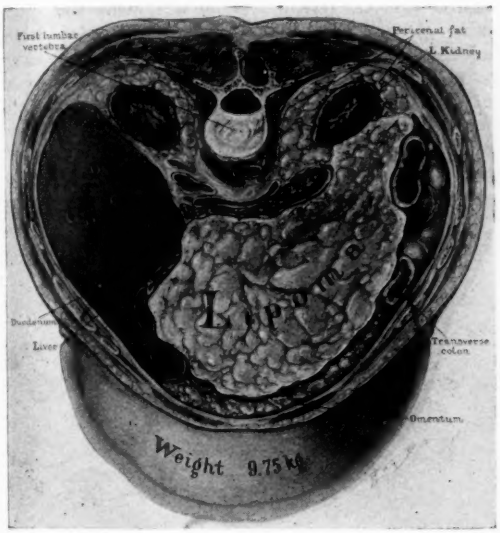

Fig. 1. Diagrammatic sketch showing site of origin of tumor and relation to abdominal viscera.

of all or part of the tumor. The three that have been removed during the last two months by C. H. Mayo are reported herewith.

REPORT OF CASES

Case 1.—A farmer's wife, aged forty-five, was examined at the Clinic August 2, 1926. Her chief complaint was enlargement of the abdomen with bloating and constipation. Her past history was not significant. Menstrual periods were regular. The increase in the size of the abdomen had become much more noticeable during the last eleven months. She had lost 7 pounds in weight.

The urine was normal. The hemoglobin was 66 per cent; the erythrocytes numbered 4,530,000 and the leukocytes 7,300. The blood Wassermann test was negative. Roentgenograms of the chest were negative.

A tentative diagnosis of ovarian tumor with probable malignant change was made and exploration advised. At operation, September 2, a retroperitoneal tumor which had pushed forward between the stomach and transverse colon was found. Grossly it appeared to be sarcomatous but microscopically it proved to be lipoma. The tumor, which weighed 17.5 pounds, was removed. It had extended well into the pelvis, the transverse colon being displaced downward. The postoperative convalescence was uneventful. The patient left the hospital on the twelfth day and was dismissed from observation on the fifteenth day in good condition (Figs. 1 and 2).

Case 2.—A farmer came to the Clinic in May, 1926, complaining chiefly of enlargement of the abdomen which he had first noticed seven months previously. During this time he had suffered considerably with

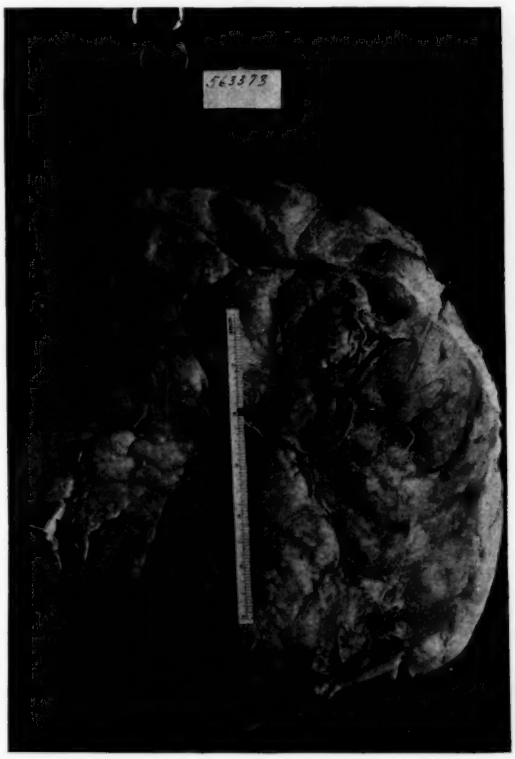

Fig. 2. Gross specimen of lipoma.

abdominal distress characterized by a burning sensation in the epigastrium following meals; this was alleviated somewhat by soda. During the last two months he had experienced a marked sense of fullness throughout the abdomen, so much so that he ate only twice daily. Occasionally following the evening meal he became nauseated and vomited. No blood was noticed.

The patient's weight at the time of examination was 3 pounds more than normal. The abdomen was markedly enlarged and was symmetric and smooth. A fluid wave could not be made out. The urine was normal. The hemoglobin was 60 per cent, the erytrocytes numbered 4,270,000 and the leukocytes 6,700; the differential count was negative. The blood Wassermann test was negative. A test-meal showed combined acids 44, free hydrochloric acid 28; the content

in the stomach was 75 c.c. Roentgenograms of the stomach and chest were negative. The systolic blood pressure was 140, the diastolic 85. The patient's general health was good. Abdominal malignancy was diagnosed and he was sent home.

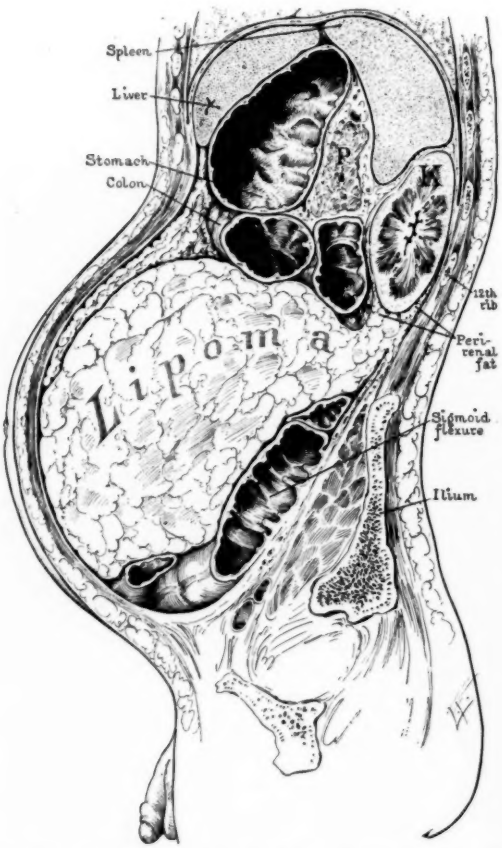

Fig. 3. Site of origin and relation of tumor to the abdominal viscera.

September 3, four and a half months after the patient's first visit to the Clinic, he returned. His general health remained good, although the symptoms first described were still present. The enlargement had increased and there had been a gain in weight of 6 pounds. The laboratory examinations were much the same as at the first visit. Exploration was advised.

At operation a huge retroperitoneal tumor was found. The ascending and transverse colon were firmly adherent and flattened over the right side of the tumor, the small intestines were crowded backward and to the right. The abdominal cavity was filled from the diaphragm to the pelvis. The omentum could not be distinguished. The tumor, unlike the one in Case 1, was definitely pendunculated and contained a great deal of connective tissue. It was removed in pieces from 2.5 to 12.5 cm. This tumor weighed 18.5 pounds. There was apparently from 60 to 80 c.c. of free fluid in the abdominal cavity, of light amber color.

Because of the shock and loss of blood the patient was transfused (500 c.c.) following the operation. The postoperative convalescence was satisfactory and the patient was dismissed on the twenty-eighth day after the operation. The pathologist's report was fibromyxolipoma (Figs. 3 and 4).

Case 3.—A woman, aged fifty-one, visited the Clinic the first time in 1917, at which time a diagnosis of central nervous system syphilis was made and treatment given. This treatment had been given intermittently until three years previously. She came again to the Clinic in October, 1926, because of enlargement of the abdomen and bloating which had been noticed for eight months. The enlargement had increased more rapidly during the last three months, and because of the accumulation of gas in the stomach following meals, she had refrained from taking all the food she wanted. There was no qualitative food distress and no jaundice. At times there was a dull aching pain in the lower abdomen on the left side. Constipation was marked.

Fig. 4. Gross specimen.

The patient was slender and appeared slightly undernourished. She weighed 120 pounds; normal weight 125 pounds. The systolic blood pressure was 118 and the diastolic 70. The temperature was normal. An irregular mass filled the upper part of the abdomen and was not removable. Examination of the urine was negative. The hemoglobin was 72 per cent; the erythrocytes numbered 4,350,000 and the leukocytes 7,000.

The gastric acids were normal. A provisional diagnosis of ovarian cyst, mesenteric cyst or retroperitoneal lipoma was made and operation advised.

At operation a large tumor in the mesentery of the descending colon was found. The mesentery of the descending colon was divided and the tumor shelled out easily and with little hemorrhage. Exploration of the abdominal viscera was negative. The tumor weighed 1,600 gm. On pathologic examination the tumor was diagnosed lipoma. The patient recovered uneventfully and left the hospital on the fifteenth day after operation (Fig. 5).

SUMMARY AND DISCUSSION

The symptoms of retroperitoneal lipoma are variable: of the twelve cases reported by Masson and Horgan six patients first noticed a sensation of increased pressure in the abdomen, six complained of slight abdominal pain and two of pain in the back. In only one case was the pain severe. Six complained of food distress and occasionally vomited. Five had quite obstinate constipation and six had lost weight. In cases

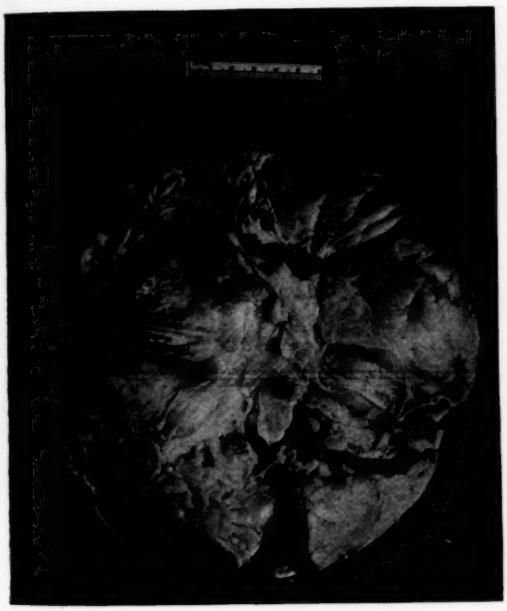

Fig. 5. Gross specimen.

in which the lipoma was degenerating the symptoms were acute, with fever, localized tenderness and an increase in leukocytes.

The tumors were more common in females; about 72 per cent were females and 28 per cent males. The age was from forty to sixty years. The youngest patient in Masson and Horgan's series was forty and the oldest seventy-two. The shortest history was ten months, the longest ten years; the average was about seven years.

About 79 per cent of the tumors were in the abdominal cavity and 21 per cent in the pelvis. They usually arise from the pararenal fat, but may arise from the renal capsule, the mesentery, the pararectal or retrorectal fat. They occur quite equally on both sides of the abdomen, possibly more often on the left than on the right. The types vary, von Wahlendorf found pure lipoma in 54 per cent of the cases and mixed tumor in 46 per cent; 14 per cent showed sarcomatous change. Two of Masson and Horgan's twelve cases showed sarcomatous change.

The ultimate prognosis is usually grave. In von Wahlendorf's series the operative mortality was 25 per cent; in Masson and Horgan's series it was 16 per cent. Recurrence is not uncommon and often with recurrence there is sarcomatous change.

We believe that retroperitoneal lipomas are more common than has been supposed, and that exploration should be carried out in all cases of abdominal tumor, particularly if the enlargement has been slow and no organic disturbance can be elicited. Retroperitoneal lipoma before removal often resembles sarcoma, grossly. A specimen should always be examined microscopically and if no malignant change is found the tumor is usually removed.

We removed the tumors through a right rectus incision 2.5 cm. from the umbilicus. This affords good exposure for exploration and can be extended as desired. It is apparently much better than the posterior incision advised by Krogius, which would be feasible for exploration of small tumors lying near the kidney. In our three cases the tumor spread within the mesentery of the transverse colon. Their origin was therefore on the left side of the spine. In two of the cases the omentum was taken up in the great spread of the tumor.

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"NARCOSAN" AND DRUG ADDICTION

Newspapers have carried a story concerning the discovery by "Dr." A. S. Horovitz of a new remedy for drug addiction known as "narcosan." Since 1913, Horovitz has been identified with attempts to promulgate cures for all sorts of disorders by mixtures of lipoids and vegetable substances of the nature of nonspecific proteins. Included in his records are the Horovitz-Beebe "cure" for cancer, the Merrell Proteogens for the cure of practically everything, and more recently "narcosan," originally brought out about 1920 under the name of "Lipoidal Substances." Horovitz' present effort to promote "narcosan" as a cure for narcotic addiction is supported by an investigation by Dr. Alexander Lambert, ex-president of the American Medical Association, and Frederick Tilney, one of the editors of the Archives of Neurology and Psychiatry. The paper appeared in the New York Medical Journal and Record. It was rejected by the Journal of the American Medical Association because the Council on Pharmacy and Chemistry rejected the product known as "Lipoidal Substances" in 1921, because up to the present time the product has not been resubmitted, and is apparently still of unestablished composition, and because the clinical investigations are not set forth in such a manner as to indicate even ordinary controls. (Jour. A. M. A. Dec. 18, 1926, p. 2097.)

BORIC ACID AND A HOSPITAL ACCIDENT

In a hospital, through a confusion of technic among three nurses, infants in the nursery were apparently given boric acid solution instead of drinking water and six died. Such accidents will no doubt be prevented in the future by rulings relative to the manner of preparing water for drinking purposes and as to the bottling and labelling of all solutions of medicinal value. Compared with phenol, cresol or mercury preparations, boric acid is relatively non-poisonous, but cases are recorded of death, even of adults, when considerable quantities of saturated boric acid solutions have been introduced into the body. In reported cases, from 1 to 3 Gm. have produced serious symptoms, and from 15 to 30 Gm. have been fatal to adults. In the recent accident, each baby must have received from 15 to 60 c.c. of a saturated solution of boric acid. (Jour. A. M. A. March 12, 1927, p. 841.)

ZINC STEARATE INSUFFLATION

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Although cases of insufflation of zinc stearate among infants have been reported from time to time over a period of about eight years, we have felt that it was worth while to report the cases which have been under our observation. Our reasons for reporting these cases are, to emphasize again the relative frequency of this condition, the severity and character of the symptoms and the results obtained in these patients.

In reviewing the literature, the first recognized case reported is found to be that of Murray Bass.[1] A previously well ten months old infant spilled zinc stearate powder on his face, and a few minutes later was found in a condition of collapse. When a physician arrived, the child was cold and pulseless, and his breathing was very shallow. He was revived, and appeared to be recovering when, after a period of twelve hours, he again went into collapse, both lungs filled with râles, breathing became bronchial in type, the temperature rose to 102 degrees, and just before death the respiratory rate reached 104. Two points emphasized in this case were: (1) the presence of marked air hunger and (2) a respiratory rate higher than the temperature.

A comprehensive report of twelve cases by Herman and Ochsner appeared in the American Journal of Diseases of Children in 1922. In all of these the onset was sudden and stormy with symptoms of partial to complete asphyxia lasting from twenty-four hours to two or three weeks. The important symptoms noted were rapid respirations, cyanosis, rapid pulse, intermittent temperature and abdominal distension. In eight cases there was an initial partial asphyxia followed by gradual recovery without definite involvement of the lungs. The treatment was that of bronchopneumonia—viz., abundance of sunlight and fresh air, liquid diet, hydrotherapy and good elimination. In experimental work on dogs Herman and Ochsner[2] insufflated zinc stearate through a tube passed to a point just beyond the vocal cords, while the animals were under ether anesthesia. The dogs were ill for a few days with loss of appetite,

temperature 101-103, a brassy cough and dyspnea of short duration. The lungs of the dogs killed three days after insufflation showed raised whitish areas in the lower and middle lobes with microscopic findings of congestion and increase of interstitial tissue, a typical picture of catarrhal bronchopneumonia. Cultures of lung tissue were sterile.

In January 1923, a case of pneumonia from inhalation of zinc stearate talcum powder in an eight month infant was reported by William Edmonds.[3] O'Keefe[4] found that the victims were all active infants from eight months to one year of age, who, in playing with a powder box, received a shower of powder on the face, a part of which was inhaled. In a few hours he found an increase in pulse and respiration, followed shortly by an elevation of temperature. Some cases resembled laryngeal diphtheria while others were like bronchopneumonia. In his cases the white blood count remained normal, there were no definite signs in the chest by *x*-ray and the temperature broke by crisis in the non-fatal cases. In treating these children, O'Keefe took into consideration the effects of zinc both as a systemic poison and as a local irritant and he resorted to such measures as gastric lavage, free catharsis, expectorants and croup tents besides general supportive treatment.

A committee led by Abt, Woodward and Leech was appointed by the American Medical Association to investigate the incidence and morbidity of zinc stearate inhalation. In a report[5] by these men it is stated that up to that time there had been one hundred and thirty-one cases of poisoning, twenty-eight of which had proved fatal. Their conclusions were that (1) zinc stearate is not necessary, (2) that its use should be discouraged by the medical profession and (3) that manufacturers be compelled to use self closing containers with uniform caution labels.

During the last five years we have had eight cases of zinc stearate insufflation under our care. One of these children died, three of them were acutely ill for from two to five days and four were ill only a few hours.

In all of these cases the symptoms at the onset were severe and alarming. The first symptoms to appear in all of them were marked dyspnea with rapid respirations, almost constant brassy cough, hoarseness and apprehensiveness. These symptoms persisted in the four mildest cases from one-half to three hours, though gradually diminishing, at the end of which time the children were apparently perfectly well. During this time they did not run any temperature and physical examination revealed nothing. Except for the lack of temperature and the absence of throat findings these children presented a picture very much like laryngeal diphtheria.

In the other four children the course was different. The respiratory difficulty, the brassy cough and hoarseness persisted much longer and other symptoms and findings appeared. At the end of four to eight hours the children began to run a temperature which varied from 100 to 104. Physical findings of a diffuse bronchitis appeared with coarse, moist bronchial râles heard over the entire chest. In the three children who recovered, these findings persisted for several days, the temperature had a morning and evening variation and finally went down by lysis. The marked dyspnea gradually subsided, the physical findings of a diffuse bronchitis gradually cleared up, and they made a complete recovery. The hoarseness and laryngeal symptoms disappeared before the bronchial findings and symptoms.

In the child that died, besides the findings of a diffuse bronchitis which were already present, fine subcrepitant râles were heard, at the end of eighteen hours, in both bases posteriorly. The child's respirations became more and more rapid, evidences of consolidation appeared and, at the end of twenty-four hours, there were well-defined areas of bronchopneumonia in both sides. The child became more and more toxic, cyanosis appeared and death occurred in forty-eight hours after the onset. This child appeared more toxic from the beginning than the other children.

In studying these eight cases it is seen that in all of them we had evidence of severe laryngeal irritation, in four of them evidence of bronchial irritation as well, while in one of them a massive bronchopneumonia developed. Although the resistance of the child is probably a factor in determining the extent and severity of the illness following zinc stearate aspiration, nevertheless we think that the biggest factors are the

amount of the powder aspirated and the depth in the bronchial tree to which the zinc stearate descends. In the four children described, in which the symptoms were entirely laryngeal and in which the symptoms were comparatively short in duration, the powder probably did not go beyond the larynx, while in the other four, some of the powder was aspirated into the bronchi and in one actually reached the lung tissue.

It seems as though the symptoms which develop in zinc stearate insufflation are due not only to mechanical irritation but also to a toxic factor present in zinc stearate. the toxicity being probably the predominant element. The small amount of powder which these children usually aspirate would not be enough to cause the profound disturbance that is present, from purely mechanical irritation.

DIFFERENTIAL DIAGNOSIS

The diagnosis is not usually difficult, as a history of zinc stearate aspiration is almost always present. The conditions which need to be considered when a history is not obtainable are: (1) simple croup; (2) laryngeal diphtheria; (3) enlarged thymus; (4) foreign body in the larynx. In simple croup the respiratory rate is usually much slower than in zinc stearate aspiration and there is also usually a reddened throat present. The use of steam inhalations will ordinarily relieve the symptoms of croup very quickly and this is not true in zinc stearate laryngitis.

If there is not pharyngeal diphtheria present, it may be difficult to differentiate laryngeal diphtheria from zinc stearate aspiration in the early stages.

The dyspnea which is sometimes present in an infant with an enlarged thymus might have to be considered, but the hoarse cry and brassy cough are not usually present.

The presence of a foreign body, other than zinc stearate, in the larynx may give rise to dyspnea, hoarseness, and brassy cough, but the toxic symptoms are usually not present.

TREATMENT

The children we have had under our care suffering from zinc stearate aspiration were given much the same routine care, with additional treatment as indicated. The routine procedure consisted in (1) placing the child in bed with the head lowered; (2) continuous steam inhalations; (3) atropine sulphate every four hours by mouth, in dosage according to the age of the child; (4) plenty of fresh air, maintaining the temperature at 70 degrees to prevent chilling; (5) forcing fluids; (6) hydrotherapy for fever.

CASE REPORTS

Case 1.—Baby M., age eleven months. Female. While shaking a can of zinc stearate a small amount of the powder went into her face. She immediately began coughing, choked and after a few minutes became slightly cyanotic. The cough was persistent and of a brassy character. The mother noticed that her voice was hoarse. The child was seen by one of us (E. D. A.) about one hour after the onset. At this time the child was pale, appeared apprehensive and had a constant, irritating brassy cough. The respirations were seventy per minute, the temperature was 100 (R). Physical examination showed coarse bronchial râles over the entire chest. The child was given the treatment outlined previously but her condition did not improve. At the end of twelve hours her temperature was 103 and remained between 103 and 104 until her death. Her respirations were eighty per minute, she was slightly syanotic and she had physical findings of a diffuse bronchitis. At the end of eighteen hours fine subcrepitant râles were heard at both bases and the general condition of the child was worse. At the end of twenty-four hours she had definite areas of bronchopneumonia in both bases. Her condition became more and more grave, her respirations were very shallow and the rate reached ninety-four before death occurred, about forty-eight hours from the time she aspirated the zinc stearate.

Case 2.—Baby M., age eight months. Male. A small amount of zinc stearate was aspirated by this boy and immediately he developed rapid respirations, dyspnea, brassy cough and marked pallor. When seen, two hours after aspiration, there was no temperature but a few coarse râles were heard in the chest. The child was placed in the hospital and given the routine treatment. Six hours after the onset the temperature was 100.6 (R). The respirations were still rapid but the choking and brassy cough were less. For the next four days the temperature varied from 100 to 102.6 (R). There were typical physical findings of a diffuse bronchitis present. The general condition of the child was good. After the first few hours the respirations dropped to between thirty and forty and after four days gradually came back to normal. *X*-ray pictures on the third day showed no areas of bronchopneumonia. White blood counts taken on the second and third days were 9,600 and 10,800. On the fifth day the child seemed perfectly well and there were only occasional coarse râles heard, and the child was discharged.

Case 3.—Baby B. Female. Age ten months. Aspirated a small amount of zinc stearate. Almost immediately choking, dyspnea, harsh, persistent cough and evidences of fear and apprehensiveness appeared. The child was examined about one-half hour after the

onset and there were no physical findings present. The child was pale and seemed to be somewhat in shock. The temperature was 97 (R). She was placed in the hospital and given the usual treatment. Coarse bronchial râles were present in the chest when the child was examined four hours later. At this time the temperature was 100 and this gradually rose to 102 and varied between 100 and 102 for the next two days. It then went down by lysis. The respirations varied from thirty to sixty. At the end of four days the chest was clear and the child seemed perfectly well. *X*-ray of the chest on the second day was negative.

Case 4.—Baby S. Age five months. Male. This infant was first seen by Dr. Kenneth Phelps about fifteen hours after the aspiration of zinc stearate. He referred the case to me at that time. The parents stated that the child had choked and coughed at the time of the aspiration, and that since then it had been hoarse, had breathed rapidly, refused food and coughed a great deal. The temperature was 100 (R). Physical examination revealed a few coarse bronchial râles. The respirations were thirty. The child did not appear very sick but was sent to the hospital for treatment and observation. It remained there for two days, during which time the temperature did not go above 100.6. The râles disappeared at the end of eighteen hours, the respirations became normal and the child was discharged.

Cases 5, 6, 7, 8.—These cases are reported together as the symptoms and findings were practically the same in all four. The ages of the children were six, ten, thirteen and fifteen months, respectively. In all of them the symptoms appeared almost immediately after the aspiration of zinc stearate. Dyspnea, choking, rapid respirations, brassy persistent cough and a look of fear were present in all of them. These symptoms lasted for from one-half hour in Case 7 to two hours in Case 8. The symptoms gradually disappeared and the children became perfectly well. There was no temperature and physical examination revealed nothing in all four cases.

SUMMARY

1. Zinc stearate aspiration occurs much more frequently than it should. It's use as a dusting powder for infants should be discontinued. If used at all, it should be in cans which automatically close. Every mother, on leaving the hospital with a new baby, should be warned against the use of zinc stearate.

2. In many instances only the larynx is involved, the cases are not fatal, and are of rather short duration.

3. If the zinc stearate reaches the bronchi it causes a severe bronchitis which may develop into a bronchopneumonia.

4. If the powder reaches the lung tissue, it may cause a severe broncho-pneumonia.

5. The symptoms arising from zinc stearate aspiration are probably due to both the mechanical and the toxic effects of the powder.

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USELESSNESS OF INSULIN BY INUNCTION

Attempts to give insulin by mouth, perlingually, by duodenal tube, intratracheally, by inhalation, and by-rectum, either in solution or in suppositories, have given results which in the main are either mechanically difficult, inconclusive, inconstant, or wasteful of the drug. An investigation has recently been made to decide whether insulin inunctions would be of any value in the treatment of human diabetes. As much as 1,000 units of insulin dissolved in almond oil was rubbed for a period of one hour into the skin of the abdomen, chest and arms with entirely negative results. Other vehicles were used with equally negative results. On the basis of this evidence the conclusion must be that insulin inunctions "are useless as a therapeutic measure." (Jour. A. M. A., Feb. 26, 1927, p. 652.)

NON-SPECIFIC PROTEIN ADMINISTRATION

The intravenous injection of typhoid vaccine with an initial dosage of 50 millions, each subsequent dose increased by 100 millions, and given at four day intervals, is one of the most reliable means of producing fever. It is a drastic measure and one should be certain that the patient's vital organs are sufficiently healthy to withstand the attacks of fever thus produced. The intramuscular injection of milk skimmed by centrifugalizing and sterilized by boiling in the water bath for ten minutes, has good pyrogenic properties without great toxicity. The usual dose is 5 c.c., gradually increased to 10 c.c. With those who have a tendency to strong febrile reactions, small doses should be given at first. The injections must be adjusted to avoid severe reactions and anaphylactic shock. (Jour. A. M. A. Jan. 8, 1927, p. 119.)

THE SIGNIFICANCE OF CERTAIN SIGNS AND SYMPTOMS IN CASES OF SURGICAL MASTOIDITIS*

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In a study of surgical mastoiditis some years ago, it was found that in only 40 per cent of the cases could it have been easily diagnosed; in these all the typical signs and symptoms were present. In the remainder, however, in which the syndrome is not definite enough for prompt conclusion, it is necessary to weigh the evidence and make decisions carefully. To expect to fit the textbook description of a disease into the dimensions of a given case in all instances, is to court great disappointment very frequently. I wish to present here, very briefly, my views of the significance of certain symptoms and signs as encountered in cases to be classified rather as subacute than acute and not chronic suppurative otitis media and mastoiditis. The acute fulminating type and the chronic type present individual problems.

THE PATIENT

Too frequently, perhaps, the patient may be overlooked when disease is being considered, and, after all, it is he who is the most interested. One should be able to classify the type of patient being dealt with as to his temperament, his susceptibility to pain, his resistance to infection and disturbed function within the first few months. Thus the experienced observer can see something in the appearance of the patient, "not easily reducible to words," as Kerrison says, which may suggest malingering or, conversely, the patient may tend to make too little of his illness. In other words, the patient may not look ill, or the appearance may belie the history. When a patient looks as if he not only is in good health, but actually feels quite well, less significance may be attached to what might otherwise be considered a prolonged convalescence. On the other hand, when symptoms and signs are disappearing and the patient is not gaining in health and is not "looking well" more significance must be attached to symptoms or signs. In many instances the latter have been of more value to me than the laboratory aids. One should see the patient as an organism in a state of disease rather than only through the hole in the speculum.

DURATION OF SYMPTOMS

It has been shown often that there is no fixed schedule for resolution in cases of otitis media and mastoiditis. Other signs and symptoms are far more characteristic, and the observer must be governed by his judgment.

Deafness.—A purely middle-ear type of deafness of varying degree of severity may be expected in any case of otitis media. If the cochlear or vestibular branch of the auditory nerve is affected, greater importance must be attached to deafness as a sign or symptom. Fortunately, other signs and symptoms are present in surgical conditions. Loss of hearing may not call for intervention any more than loss of hearing with mumps, but it is a symptom to consider.

Pain.—Pain, although an important symptom, must be carefully considered in its proper relation to other symptoms and signs. What one patient might consider pain another might disregard. It is usual to have pain a prominent symptom in the very early stages of the involvement especially when the mastoid is of the small-cell variety. The cause may be considered as intracellular pressure due to swelling of the membranes lining the cell. As the membrane begins to secrete more rapidly, the pain gradually disappears.

There are two types of pain encountered: a dull aching sensation, and a sharp, neuralgic pain. The dull pain may be present in either the small-cell, or large-cell mastoid. It may be complained of at any time of the day, usually more so when the patient is physically tired. It can be taken as a symptom indicating indolence and slow resolution of the disease. It may be situated over the mastoid or over the parietal region. Pain that affects the entire head may be looked on as due to toxemia, or involvement of the dura.

Pain occurring at night has been found in nearly all instances to be due to a parasinous, or extradural abscess. This, I believe, is a very important symptom. The mechanics of the pain is not clear unless it is due to congestion from the dependent position of the patient. Usually the pain gradually disappears if the patient is up and around.

Sharp pains are encountered when there is irritation of the fifth nerve. One striking case

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stands out in my experience: that of a little boy eight years old, who complained of a sharp pain of short duration twice daily. The pain started in the lower jaw and extended to the first branch of the fifth nerve. The mastoid had been incompletely operated on recently. Since there was no other explanation for the pain, the mastoid was explored, although its general appearance suggested that the condition was satisfactory. The zygomatic cells were found to be extensively affected, and the dura was red and congested when exposed in Trautman's triangle. Further exposure was made to allow for decompression. The pain did not recur. Involvement of the zygomatic cells has, in previous cases, caused sharp pain, but in this case I believe that the congestion of the dura was the cause.

Affection of the sphenopalatine ganglion, as observed in certain patients with upper respiratory infections, must not be overlooked as a cause of sharp pain.

Variations of temperature.—Rise in temperature must always be regarded with suspicion, but it is difficult to evaluate it as a sign because persons vary greatly in respect to pyrexia. The septic type of temperature curve, and the continuous high temperature, are not considered in this instance. With a rise in temperature there is usually sufficient other evidence associated to make it possible to estimate its significance correctly.

Character of discharge.—Much importance can be attached to the character of the discharge, particularly in cases past the really acute stage of the infection, in which a serous or serosanguineous discharge is the rule. It is in the acute stage that the bacteriologic factor is of the most importance because it is then that pure cultures may be expected. Except for specific infections like diphtheria, in which a definite therapeutic measure is imperative, the identity of the microörganism does not influence the management materially unless possibly earlier interferences might be indicated when the Type III pneumococcus is encountered. Kerrison also believes that too much can be made of the bacterial factor.

Ordinarily a mucopurulent stringy discharge may be regarded as a sign of approaching resolution, particularly if the patient has not been allowed to inflate the eustachian tubes himself. Considerable purulent discharge, too much in fact to be attributed to disease of the middle ear alone, can be regarded as suggestive that operation on the mastoid may be necessary. The idea of avoiding a chronic suppurative process and preventing varying degrees of middle-ear deafness from scar formation, is always uppermost in one's mind. In itself, this could be the only indication for well-directed surgical interference. Suggestive, too, is the varying amount of discharge, a scanty discharge being followed by discomfort and a subsequent free discharge bringing relief. Rise in temperature, before the discharge takes place, may be looked on as important evidence.

PHYSICAL CONDITION OF THE MIDDLE EAR AND MASTOID

The usual findings in a fairly typical case of suppurative otitis media with mastoiditis are generally well known, and are defined as purulent discharge, drooping of the membranous meatus on the posterior superior wall of the canal, and tenderness on pressure over the mastoid antrum, tip and emissary vein. Edema may also be present, or swelling of the soft parts over the mastoid. In the presence of all these signs, however, the diagnosis is perfectly obvious. It frequently happens that only one of the more common signs is present, and then it becomes more difficult to establish a diagnosis.

When very definite drooping has been present, sometimes to the extent of closing off drainage from the middle ear, even though other signs have been absent, I have always found the mastoid cells involved. The tenderness over the mastoid may be absent as a result of the anatomic conformation and type of the cells in the mastoid process. The drum may be intact, presenting the picture of a latent suppurative otitis media with surgical mastoiditis.

Kerrison has coined the term "dripping drum" which describes in a word what would be difficult to explain in a paragraph. The dripping drum may exist without drooping of the membranous meatus. Perhaps myringotomy has been repeated without the desired effect.

After the discharge has been cleared out more will immediately present itself. This means that the amount of pus cannot be accounted for by

the involvement of the middle ear alone but is an overflow from the mastoid antrum and cells. Nothing short of a mastoid operation will give satisfactory results.

Situation of the perforation.—The site of spontaneous perforation may be important. The anterior inferior perforation is not so significant, for instance, as the perforation situated posteriorly and above Schrapnell's membrane, because if apparent resolution took place there would still remain the danger of cholesteoma from extension of the epithelium into the adjacent antrum. In other words, it might be important to anticipate trouble and avoid it, particularly if resolution of the disease did not take place in a reasonable length of time and in a satisfactory manner.

When myringotomy is performed, the perforation is made in the most desirable position for drainage. If spontaneous rupture of the drum has taken place and the perforation is found in a position other than the posterior quadrant, even though there may be some drooping, myringotomy after the method of Kerrison will occasionally obviate the necessity for further interference.

Mastoid tenderness.—Tenderness is always a subjective sign but when the patient's reaction to pain has been satisfactorily classified, it can be interpreted as practically an objective sign. It is best elicited by using the same amount of pressure on both mastoid processes and watching the facial expression. There will be little difficulty in defining the site of the discomfort. One can exert sufficient pressure over a normal mastoid process to cause pain, but if the pressure is slowly applied and steadily increased, more accurate information can be obtained.

In the absence of definite physical change in the middle ear, tenderness of the mastoid may or may not be of great significance. In conjunction with positive roentgenographic findings and a history of recent trouble in the ear, or of infection in the upper respiratory tract, mastoid tenderness may point to the presence of surgical mastoiditis without apparent otitis media, as Hempstead has shown.

Edema and swelling over the mastoid process.—If there is edema or swelling over the mastoid, and if extension from a furuncle can be ruled out from the history and roentgenographic findings, one can expect that the mastoid process is affected. If there is any uncertainty, the diagnosis will be established after a delay of a day or more.

ROENTGENOGRAPHIC FINDINGS

Good clear roentgenograms can give the observer very valuable information and should always be used when possible. It is too much to expect a positive diagnosis to be made from the roentgenograms, although it is sometimes possible. They may show (1) the type of mastoid, whether small-cell, large-cell, or acellular, and (2) the effect of the disease such as clouding, or the breaking down of intercellular septa with coalescence.

If it is shown by roentgenograms that the mastoid is of the small-cell variety, all painful symptoms may be found to be increased and more easily explained. The physical limits to which the operative procedure must be extended are recognized. In case the mastoid is shown to be the large-cell variety, particularly with cells behind or over the knee of the sinus and an extensive zygomatic arrangement of cells, it is evident that any interference short of complete exploration and eradication of the disease is inadequate. In the case of zygomatic cells, painful symptoms may be absent.

Roentgenograms of both mastoids should be available for comparative study. Often there is not much difference in conformation unless there has been a history of ancient otitis media. It very rarely occurs that one mastoid is found to be acellular or greatly different from its fellow under normal conditions. One expects to find the picture of a very dense contracted mastoid on the side affected by chronic suppurative otitis media.

In the earlier stages, clouding of the roentgenograms must not be taken too seriously but used as auxiliary information. Definite destructive processes are readily recognized and must be given face value.

SIGNS OF EXTENSION TO THE BRAIN, AND LATERAL AND SIGMOID SINUSES

Such symptoms and signs could not fall in the scope of this paper and therefore will not be considered. I shall, however, mention four special signs: (1) choked discs which may be present with a parasinous abscess without intradural extension; (2) facial paralysis which may appear as a result of involvement of the nerve within the middle ear, or meningitis within the internal

auditory meatus; (3) homolateral palsy of the abducens nerve with or without much headache (Gradeningo syndrome), which may result from involvement of the meninges on the anterior surface of the apex of the petrous portion of the temporal bone, and (4) irritation of the vestibular branch of the auditory. If examination shows that the labyrinth is functioning, or hypersensitive responses are obtained, the condition may be attributed to irritation from otitis media. In all these instances surgical interference is justifiable but it must be admitted that spontaneous resolution may take place.

LABORATORY AIDS TO DIAGNOSIS

In the general physical examination which all patients should undergo before major surgical operations are undertaken, studies of the blood, including differential leukocyte count, estimate of the hemoglobin, and, if indicated, blood culture, should be carried out. It has been everyone's experience that when the results fit into the clinical picture, the tentative diagnosis is made without difficulty. At times the laboratory aids are very disappointing and clinical judgment must be relied on, or the findings may be disconcerting and if they do not fit into the clinical picture, they should be repeated, and evaluated carefully.

SUMMARY

In certain cases that can be classified as subacute suppurative otitis media with mastoiditis, the absence of many of the usual symptoms and signs may make a definite diagnosis difficult unless the evidence available is evaluated in a judicial way. Certain symptoms and signs stand out as important. Too great dependence must not be placed on the laboratory aids. In the final analysis, the diagnosis of the real condition of the patient rests on one's clinical and surgical judgment.

EPHEDRINE

The Council on Pharmacy and Chemistry reports that the A. M. A. Chemical Laboratory has found the ephedrine sulphate received from Eli Lilly & Co. to be of acceptable quality. The advertising claims for Ephedrine Sulphate-Lilly have been revised in accordance with the recommendations of the Council, and therefore the Council accepts Ephedrine Sulphate for description in New and Non-official Remedies and lists Ephedrine Sulphate-Lilly as a brand which complies with the New and Non-official Remedies' standards. (Jour. A. M. A. March 19, 1927, p. 924.)

THE EVOLUTION OF NEPHRITIS: ITS PROGNOSIS AND TREATMENT*

Part III

THE TREATMENT OF NEPHRITIS

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A discussion of the treatment of nephritis does not permit the laying down of any hard and fast rules. Each patient presents an individual problem in management. It may be profitable, however, to discuss the management under several general headings. Before proceeding to this discussion, the admonition not to forget the patient in our zeal to treat the lesion in the kidneys is not out of place. Chronic nephritis is so closely linked with general cardiovascular degenerative processes, that these must receive consideration along with changes in the kidney. Likewise, in nephritis with edema the disordered water and salt interchange in the tissues in which the edema occurs and disordered cell metabolism may be jointly responsible with the kidneys for the persistence of the edema.

With these ideas in mind, we shall turn our attention to the general measures involved in the treatment of nephritis.

1. One of the questions first to be settled is that of eradication of known foci of infection. To arrive at a correct decision on this question requires circumspection and an attitude inclined to conservatism. Since upper respiratory and tonsillar infections play an important rôle in the etiology of nephritis, it is important for the future welfare of the patient that every precaution be taken to protect him against possible damage resulting from the recurrence of these infections. This course should be pursued for two reasons. First, the nephritis patient has a noteworthy lack of resistance to the usual seasonal upper respiratory infections. Second, even though a patient may be making an excellent recovery, if he develops an upper respiratory infection or tonsillar infection, his nephritis is re-

*From the Medical Division of the Nicollet Clinic, Minneapolis. Part III concludes the series by the author on The Evolution of Nephritis, which began in the March number.

activated and he may revert to the condition he was in three to six months or even a year before his infection. In an out-patient clinic several instances of this kind are observed each winter season. Because of these possibilities, everything that can be done to restore the nose and paranasal sinuses to a normal condition should be attended to. Likewise, infected tonsils should be removed when the patient is in good condition and the nephritis is in a quiescent stage. There is more reason for hesitation concerning the removal of dental foci, since the etiological relationship of these infections to nephritis is less definite and is even open to question.

The attitude toward the removal of foci of infection may be summed up with the statement that their removal should be undertaken, not with the expectation of curing the nephritis, but rather for the purpose of protecting the patient from the evil consequences which might result from future infections.

In pyelo-nephritis and focal nephritis a more radical attitude toward eradication of all infective foci is justifiable. It may, indeed, be undertaken as a curative measure, but the treatment of pyelo-nephritis is not within the scope of this paper. It should also be recognized that furuncles, carbuncles, hand and foot infections and other infections all create an additional hazard in nephritis and should receive early and scrupulous attention. From what has been said concerning respiratory infection, it follows that the nephritis patient should receive all possible protection from exposure to the elements during the winter months while he is out of doors. This is best afforded him by seeing that light woolen underclothing and stockings and the proper footwear are worn.

2. Restriction of physical activity. In acute nephritis, rest in bed is imperative. In the essential edematous nephritis a one to two months' period is usually necessary, depending upon the severity of the nephritis. It is desirable that it should be enforced until the edema has entirely subsided, as evidenced by the marked lessening of casts and white blood cells and the complete or almost complete disappearance of red blood cells in the sediment. This ideal state, however, is not always possible to attain and it is at times undesirable to enforce rest for too long a period. At times when edema has disappeared and renal function reached a normal level, even if there is a moderately active degenerative process, nothing more is to be gained by keeping the patient in bed. At this stage the kidney does not appear to be in any way compromised by a reasonable amount of activity, even to the extent of the patient's engaging in his usual occupation, if it is not too unfavorable from the standpoint of exposure to cold and dampness. In following the patients from the medical wards of the Peter Bent Brigham Hospital to the Out-door Department, it was unusual to observe any cessation in their progress to recovery and any exacerbation was very exceptional.

In acute hemorrhagic nephritis a period of two to three months' rest in bed is a necessity and rest in bed is the factor of first importance in treating and safeguarding the future welfare of the patient.

3. Fluid intake. In acute nephritis and subacute and chronic nephritis with edema, the fluid intake should be kept at the lowest possible level which is compatible with the comfort of the patient. It is desirable to keep it down to an 800 to 1200 c.c. limit, varied to some extent according to the kidney output, nitrogen retention and the seasons. Usually during hot summer weather 200 c.c. more are required to keep the patient comfortable, than during the winter. Patients with chronic nephritis with a small amount of edema frequently can be kept on 1500 c.c. intake without water retention. From information obtained in dealing with nephritic patients, I am convinced that the mistake of forcing fluids in acute and subacute nephritis is frequently made. From the physiological point of view it is extremely doubtful if it is well to drink fluids too freely even with normal kidney function. The optimal intake is the amount that will insure a 1200 to 1500 c.c. output in the normal individual. Total kidney work can be tremendously increased by forcing fluids and fatigue of the kidney may be brought about in this manner. If you will recall, in the discussion of normal renal function[1] it was stated that about 62 liters of filtrate are required to pass through the glomerular system to produce 1 liter of urine. Therefore, to double the output to 2 liters would require 124 liters of filtrate, and to treble the output would require 186 liters. I have no scientific proof for this statement, and it is made on the

assumption that the first statement is true and that the same ratio obtains. If this is true, increasing the fluid intake beyond normal requirements throws a tremendous load on the working capacity of the kidney and it is apparent that it may be a source of potential harm to the individual. In chronic nephritis with nitrogen retention it may be desirable to increase the fluid intake to aid in the elimination of the retained nitrogenous end products. Hench[2] states this very well when he says that it is necessary to increase the fluid intake when the specific gravity becomes fixed at a level of 1.015 or below. The nitrogen level in the blood plasma is an additional indicator as to how much the fluid intake should be increased.

4. Since the ability to handle salt is the first function of the kidney to show impairment in nephritis, it is rational to restrict salt in the nephritic patient.[3] In acute nephritis and subacute nephritis with edema, the salt intake should always be kept at a low level. Some cases of nephritis with marked edema will have diuresis with discharge of the edema when put on a low fluid and salt-free diet, but others will not respond in this manner. If the edema does not disappear after about two weeks of salt-free diet, it is useless to continue rigid salt restriction. To continue for too long a period results in complete anorexia, nausea and vomiting. Before allowing the patient to proceed to this point, it is much better to change to a salt-poor diet containing two to three grams of NaCl per day. Nephritic patients without edema may be allowed more salt, or that amount ordinarily used in cooking; but they must not add salt to the food after it reaches the table. The salt-cellar and pepper-shaker should not be placed on the tray or table of the nephritic patient. If the patient is taught to use salt-poor butter and lemon juice, salt will not be greatly missed.

5. Dietary management and restriction of protein. Ten to fifteen years ago it was generally considered that sufficient restriction of protein was accomplished by placing the patient on a milk diet. Under this régime, allowing the usual two quarts of milk a day, the patient received about 80 grams of protein and altogether too much fluid. In acute nephritis it is much better to begin the treatment with concentrated fruit juice, apple sauce, jellies, cooked cereal, dry toast, zwieback, unsalted crackers and in a few days add other carbohydrates for variety. After a week or ten days a low protein régime with protein at 28 grams per day may be instituted. As to protein restriction in nephritis, the general rule may be followed to give no more protein than can be eliminated so that the blood urea nitrogen or non-protein nitrogen is kept at a normal level. A patient with acute nephritis with a definite renal insufficiency should not receive more than a low protein diet (28 grams per day). If under this régime the blood urea nitrogen falls or becomes normal, small increments of protein may be added from time to time. Meanwhile the blood urea nitrogen should be checked until 60 grams of protein per day is reached. This is the usual amount of protein allowed in the standard nephritic diet. The caloric value of the diet may be brought up to 1800 to 2500 calories by the use of carbohydrates and fats, depending upon the nutritional requirements of the patient. The amount of protein in the diet should be governed by the patient's protein metabolism and not by the albumin output in the urine.

In nephritis with marked albuminuria but without nitrogen retention, it seems irrational to restrict protein unduly and to allow the blood plasma to become further depleted of serum albumin and globulin. Why not supply this deficiency by giving a diet that contains sufficient protein for the metabolic needs of the individual patient, plus the amount that is lost in the urine? I cannot see any reasonable objection to it. In support of this view I wish to call attention to the recent investigations of Peters, Bulger and Murphy,[4] and I am taking the liberty of quoting in part their Summary and Conclusions:

"By the administration of large amounts of carbohydrates and fats it has proved possible to reduce protein catabolism to from .5 to .7 gm. per kilogram a day.

"If enough protein is given to cover the nitrogen catabolism plus an additional amount equivalent to that lost as albumin in the urine, nitrogen wastage may be prevented.

"Most of these patients when they enter the hospital show evidences of previous protein deficiency. If they are given more than enough protein to replace the amount lost in the urine, they will store the excess within certain limits, thus repairing the effects of previous nitrogen wastage.

"The protein wastage may be partly due to early dietary mismanagement. The loss of protein as al-

TABLE I

PROTEIN SELECTION DIET

Any combination of the foods listed below may be selected.
Foods not listed below must not be taken.
In Groups I and II there is a restriction in the total amount.
The foods in these groups must be served in full or half portions.
A full portion in Group I counts 1.
A full portion in Group II counts 2.
In Group III the quantity of each is not restricted, although you are urged to use discretion.
Points on recipes to count as indicated.
YOUR TOTAL SCORE FOR THE SHOULD BE ————————.
YOUR TOTAL AMOUNT OF FLUID SHOULD BE ———————— PINTS.
Do not add salt or spices to the food after it has been cooked.

GROUP I
(Each full portion counts 1)

	Full Portion	*Vegetables, etc.*	*Full Portion*
Bread (white)	1 av. slice	Baked beans	1 tbsp.
Bread (graham)	1 av. slice	Lima beans	1½ tbsp.
Uneeda biscuit	5 crackers	Potato, creamed	1 tbsp.
Shredded Wheat	1 biscuit	Potato, mashed	1½ tbsp.
Graham crackers	5 crackers	Potato, baked	1½ med.
CEREALS, ETC.		Potato, boiled	1½ med.
Oatmeal	2 tbsp.	Canned corn	2½ tbsp.
Boiled rice	3 tbsp.	Green peas	2 tbsp.
Cornmeal mush	4 tbsp.	Beets	5 tbsp.
Cream of Wheat	6 tbsp.	Spinach	4 tbsp.
Farina	6 tbsp.	Bananas	2 large
Macaroni	4½ tbsp.	Cream, heavy	⅔ cup

GROUP II
(Each full portion counts 2)

	Full Portion	*Fish*	*Full Portion*
Milk	1 glass	Cod, boiled	1"x1"x1½"
Egg	1 egg	Haddock, boiled	1"x1"x1½"
Eggs (scrambled)	1½ tbsp.	Halibut, boiled	1"x1"x1½"
Flour, sifted	⅔ cup	Mackerel, boiled	1"x1"x1½"
MEATS		Salmon, boiled	1"x1"x1½"
Lamb chop, broiled	⅔ chop	Smelt	½"x1"x3 "
Lamb, roast	3"x2½"x¼"	Oysters	7 oysters
Beef, roast	3"x2 "x¼"	Crabmeat, canned	2 tbsp.
Beef steak, broiled	2"x1 "x1"	Salmon, canned	1½ tbsp.
Chicken, roast	3"x3 "x⅛"	Shrimp, canned	6 small

GROUP III
(No restriction)

VEGETABLES		FRUIT		MISCELLANEOUS	
Asparagus	Mushrooms	Apple	Orange	Sugar	Cornstarch
Cabbage	String beans	Apricot	Peaches	Maple sugar	Arrowroot
Carrots	Tomato (fresh)	Blueberries	Pears	Syrup	Tapioca
Cauliflower	Tomato (cooked)	Cherries	Pineapple	Honey	Post-Toasties
Celery	Onions	Cranberries	Plums	Candy	Butter
Cucumbers	Squash	Grapefruit	Prunes	4 dates per day	Olive Oil
Lettuce	Turnips	Grapes	Raspberries	3 Sunshine arrowroot cookies per day	
		Muskmelon	Strawberries		
		Lemons	Watermelon		

bumin in the urine is certainly a serious contributory cause."

Outside the hospital and when the services of a dietitian are not available, the protein in the diet may be regulated by using the diet sheet here reproduced. This is copied from the one used in the Outdoor Renal Clinic of the Peter Bent Brigham Hospital and was made up by O'Hare and Vickers.[5]

In this diet one point is equivalent to 4 gm. of protein. If it is desirable to allow the patient 60 gm. of protein per day (standard nephritic

diet) a 15 point diet is ordered. If a low protein diet is desired (28 gm. per day) a 7 point diet is ordered. Any other protein allowance may be ordered in the same way. If the protein allowance is kept at a low figure the patient is advised to make up the bulk of the diet from Group III and select the protein from Group I. With a more liberal protein allowance he may select some of his protein from Group II so as to avoid monotony in the diet. By using Group III foods the total caloric value of the diet may be varied between 1800 and 2500 calories, depending on the nutritional requirements of the patient.

If the nephritis is benign or well along toward recovery, the quantitative protein restriction is not necessary. The necessary protein restriction is accomplished satisfactorily by a general restriction diet for nephritic patients such as follows:

GENERAL RESTRICTION DIET FOR HYPERTENSION AND NEPHRITIS PATIENTS

1. You should not eat soups made from meat stock, stews, cheese and nuts.
2. Do not add salt or spices to foods except that which is used in cooking.
3. Do not use ketchups, mustard, meat sauces, or other condiments except in very small quantities.
4. Meat, the size of a lamb chop or small pork chop, four times a week.
5. One or two eggs three times a week.
6. In your eating confine yourself as much as possible to vegetables, fruits, cereals, potatoes and bread.

Because of the tendency to chronicity in nephritis and the difficulty of knowing whether or not recovery in a given case is complete, it is well to advise the patient to continue the above restrictions with suitable modifications for a period of several years after apparent recovery, if not for the period of his lifetime. A diet régime such as the above will eliminate unnecessary work on the part of the kidneys. The dictum "once a diabetic always a diabetic" may in a measure be applied to the nephritic patient without being detrimental to his future welfare.

Before leaving the subject of the dietetic management of nephritis, I feel constrained to again offer the advice that in treating the kidney one should not lose sight of the patient. His nutritional and metabolic requirements should at all times require careful consideration and any régime that is instituted should be directed to maintaining optimal physical condition and nutrition. While our present state of knowledge concerning nephritis is still incomplete, there is much about it to suggest that nephritis is a general metabolic disorder in addition to its being a disease of the kidneys.

It is obviously impossible in one paper to enter into any detailed discussion of the treatment of the special manifestations occurring in the course of a nephritis that must be dealt with. However, a few of the special indications and emergencies that are frequently met will receive brief consideration. Outstanding among these are edema, uremia and cardiac failure.

Nothing will tax the physician's resourcefulness more than will the patient with a subacute nephritis with marked edema. Salt and water restriction in nephritis with edema has already been considered. The other measures that I have found to be the most helpful are the Karell diet (210 c.c. of skimmed milk every six hours and nothing else) continued for as long a period as the patient will permit, theocin 0.2 gm. every three to four hours for six to eight doses, calcium chlorid and ammonium chlorid with novasurol or merbaphen. In one case that came under my observation it was possible on repeated occasions to entirely rid the patient of his edema with nine to twelve gm. of calcium chlorid per day. A copious diuresis usually took place from the fifth to the tenth day and continued until the edema was gone. With calcium chlorid as with ammonium chlorid, the possibility of producing acidosis should not be overlooked, but the danger is minimal. Calcium chlorid has a rather objectionable taste, but this can be disguised by giving it in syrup of lemon or in ginger ale.

Ammonium chlorid may be given in the same dosage and when combined with novasurol and given according to the method of Keith, Barrier and Whelan,[6] shows perhaps the greatest promise. For the technic of administration the reader is referred to these authors. Marked renal insufficiency, if present, is a contra-indication to this method of treatment, as the originators themselves have wisely cautioned. The Epstein high protein diet (120 g. protein, low fat diet) also gives an occasional brilliant result. I have had no successful experience with it as

I have with the other methods advocated, but Dr. O'Hare told me of his success with it in at least three patients. Against these there were many more failures. Oftentimes, where one method of treatment fails in a certain individual, another is successful and it requires considerable experimentation to find the method or drug that will give the best results.

Uremia, when accompanied by convulsions and coma, is a complication that may demand immediate and rather drastic treatment. In severe uremia immediate venesection with withdrawal of 500 to 600 c.c. of blood is indicated. If the patient is anemic at the time of venesection (and this is usually true in chronic nephritis) immediate replacement of the blood withdrawn by transfusion from a suitable donor should be provided for. Otherwise the blood may be diluted with intravenous infusion of 500 to 600 c.c. of normal saline.

Elimination by free catharsis is next in importance and may be accomplished by the use of saline cathartics or elaterin. The former, if necessary, may be given with a stomach tube if the patient is unable to swallow.

Further elimination may be secured by use of two hot packs a day. If the pack does not produce satisfactory sweating, it may be reënforced by a hypodermic dose of pilocarpine.

For control of the nervous symptoms and convulsion, reliance must be placed on chloroform, morphine, or thirty grains of chloral by rectum, depending on the urgency of the symptoms.

It is likewise important to give sufficient fluid to compensate for the dehydration produced by the above measures.

In the milder forms of uremia, venesection is not necessary and all indications may be met by the employment of the other measures that are recommended.

A failing heart and circulation in the patient must be properly supported by rest, digitalis and other cardiovascular stimulants. Properly directed therapy may, in addition to aiding the heart, bring about marked improvement in the renal function.

In the treatment of the special complications and in the treatment of nephritis in general, common sense, experience and, most of all, a high degree of individualization are necessary.

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OVACOIDS AND TESTACOIDS

The advertising claims made for these preparations of Reed and Carnrick are typical of those made by this firm for products examined by the Council on Pharmacy and Chemistry and denied admission to New and Non-official Remedies in 1907. Ovacoids and Testacoids are stated to be "the hormones or autocoids of the sex glands in high concentration, and *active by mouth!*" Ovacoids is stated to "represent the hormones of the entire ovary in highly concentrated form, associated with the hormones of the anterior pituitary and with phosphorus in organic combination." Testacoids are claimed to contain "in addition to the testicular hormones, . . . the hormones of the prostate gland and organic phosphorus." The use of these preparations is irrational and dangerous because the character of the ingredients and their amounts is not declared. The administration of organic phosphorus is not only irrational but superfluous. Though indefinite and semi-secret, the composition of Ovacoids and Testacoids is sufficiently specific to place the preparations in the class of pluriglandular mixtures, to the menace of which the Council on Pharmacy and Chemistry has repeatedly called attention. The most important ingredient of Testacoids is apparently a testicular extract. Such preparations are not accepted for New and Non-official Remedies and their therapeutic value has not been demonstrated. There is nothing in the claimed composition of Testacoids to furnish a basis for the extensive claims made for the preparation. (Jour. A. M. A., Feb. 5, 1927, p. 422.)

MULTIPLE PERFORATED GASTRIC ULCERS, CASE REPORT AND REVIEW OF THE LITERATURE*

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The occurrence of a single perforation as a result of gastric ulcer is not uncommon, but the association of two or more such perforations with the same or different ulcers is unusual. In a review of the literature we have been able to find records of only thirty-two authentic cases; we are reporting one case from the Mayo Clinic (Tabulation).

REPORT OF A CASE

A boy, aged eighteen, had been perfectly well until three weeks prior to his admission to the clinic. At that time he had noticed lassitude and weakness, later accompanied by anorexia and a loss of 30 pounds in weight. For about one week he had had almost constant epigastric burning and distress which appeared about two hours after meals and was sometimes relieved by taking food. He had been working every day, however, until noon of the day before his admission, when moderately acute pain appeared in the epigastrium, especially on the left side, and he vomited twice during the afternoon and evening. The pain became localized in the lower right quadrant and was aggravated by movements of the right leg.

On examination the patient appeared undernourished, and his face was flushed. The pulse rate was 90 and the temperature was 100.8° F. There was moderate enlargement of the thyroid gland. The abdomen was moderately distended and there were generalized tenderness and muscle spasm over it, especially marked in the lower right quadrant and upper left quadrant. The urine was normal except for an occasional pus cell; the leukocytes numbered 19,900.

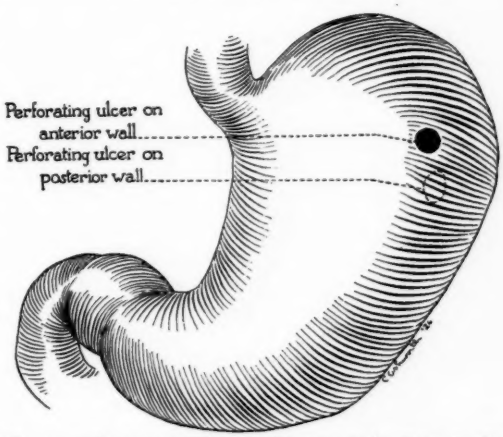
A diagnosis was made of an acute abdominal lesion and exploration was done through a right rectus incision. The abdomen was filled with gastric secretion and food remnants; there was moderate generalized peritoneal irritation, and a perforated ulcer was found on the anterior wall of the stomach well to the left of the median line. The lesser peritoneal cavity was also filled with gastric contents and further examination revealed another ulcer about 1 cm. in diameter, perforated into the lesser peritoneal cavity, almost exactly opposite the one on the anterior wall (Illustration). The appendix was moderately inflamed but was not removed as the inflammation was probably secondary to the generalized peritoneal irritation. As much of the gastric contents as possible was removed by the use of the sucker, and the perforations in the stomach were closed with double rows of chromic catgut sutures. A Paul-Mixter tube was carried into the pelvis through a separate stab wound and the incision was closed around two Penrose drains. The patient had an uneventful convalescence and was dismissed from the hospital on the seventeenth day. At the expiration of a month he had had no gastric symptoms and showed a marked gain in weight and strength.

*From the Division of Surgery, Mayo Clinic, Rochester, Minnesota. Submitted for publication November 30, 1926.

REVIEW OF THE LITERATURE

Brentano, in a series of seventy-five cases of perforated gastric ulcers, reported five multiple perforations, four with double lesions and one in which there were four perforations of the lesser curvature of the stomach. Scully mentioned two cases in which there were double lesions and Körte reported two such cases in detail. There are other scattered reports of cases.

The surgical repair of a perforated gastric ulcer was first reported by Mikulicz, in 1880, and



Diagrammatic representation of the two perforations in the stomach.

the first instance in which a double perforation was treated surgically was reported by him also nine years later. At operation he sutured one perforation on the anterior wall, but the patient died and at necropsy the second perforation was discovered on the posterior wall.

In reviewing the literature only those cases were considered in which there were two or more definite perforations of the gastric wall, each of which permitted the free escape of gastric contents. Cases in which a perforated gastric ulcer was associated with a perforated duodenal ulcer, or with a chronic perforating gastric or duodenal ulcer, or those in which a secondary perforation occurred shortly after the

closure of the primary perforation, have not been included.

In the twenty-five cases in which the sex was mentioned six (24 per cent) were males and nineteen (76 per cent) were females. This ratio is similar to that in a series of cases of single perforated gastric ulcers reported by Caird and his associates, in which 31 per cent occurred in males and 69 per cent in females. Multiple nonperforated ulcers, on the other hand, occur more frequently in males: according to Judd and Proctor, 70 per cent occur in males and 30 per cent in females.

The age at which the multiple perforations occurred is a little lower than that of the single perforations, 72 per cent of the former occurring under the age of thirty while only 53 per cent of the latter, according to Caird and his associates, were in individuals below that age. The youngest patient was sixteen and the oldest eighty.

In only two instances have there been more than two perforations. In Vianny's case there were three perforations close together near the plyorus and in one of Brentano's cases (Case 20) there were four perforations close together on the lesser curvature. In both of these cases it is probable that the multiple perforations were from single large ulcers.

In twenty-three cases the site of the perforations was recorded and in twelve of these they were symmetrically placed, one on each wall, exactly opposite each other. In two other cases they occurred one on each wall but not exactly opposed. In four cases both perforations were on the anterior wall, and in two both were on the posterior wall. The majority of the perforations were near the cardia or on the lesser curvature.

The symptoms resulting from multiple perforations do not differ from those of a single perforation; unfortunately it is only rarely at operation and usually at necropsy that the diagnosis of multiple lesions has been made.

The treatment is always surgical and does not differ from that of the single perforation but it is essential to find the second lesion. In eighteen of the cases reported there was abdominal exploration but in only four were both perforations found and closed. The patients recovered. In three of the four cases both perforations were situated on the anterior wall, and in only one, the Mayo Clinic case, were the perforations on opposite walls of the stomach.

There are two reasons for the high mortality rate among this group of cases: (1) many of them belong to a period when the necessity for prompt surgical intervention was not fully appreciated, and (2) at operation usually only one of the perforations is found and closed and the other is overlooked.

DISCUSSION

Multiple perforations in gastric ulcers may be classified in three groups: (1) those in which there are multiple perforations in a single ulcer; (2) those in which two or more ulcers, not related to each other, become perforated, and (3) those in which two perforations occur exactly opposite each other, perforations of the so-called kissing type. This is the most common type. The symmetry of the perforations in this group is often so exact that it simulates the lesions that would be produced by a bullet passing through the stomach. Indeed, in several instances it was suggested that the patient might have been shot.

Inasmuch as gastric ulcers are multiple in 6 per cent of cases (Judd and Proctor) it can readily be seen that the occurrence of two simultaneous perforations may be only a coincidence and this is more likely to be the case when the perforations are neither directly opposed nor occur side by side in the same ulcer. It is not surprising that two perforations should occur in one ulcer, especially when that ulcer is large and the perforating process encounters varying degrees of resistance in different portions of its base. The most common relationship, however, is for opposing ulcers to perforate, and this too may be only a coincidence because gastric ulcers have a tendency to this situation. If gastric ulcers are infectious in origin and the perforation is due to the activity of the infecting agent, then it does not seem unreasonable to suppose that the point of contact opposite the first ulcer, by reason of its proximity, would be more exposed to the influence of this agent than any other portion of the stomach. The fact that in many cases the observation has been made that one of the ulcers is apparently much older than the other would seem to indicate that some such influence was at work and that all of the instances in which

REVIEW OF THIRTY-TWO CASES OF MULTIPLE GASTRIC ULCERS REPORTED IN THE LITERATURE AND ONE FROM THE MAYO CLINIC

Case	Author, Year	Age, Sex	Symptoms	Description	Treatment	Remarks
1	Bell		No data	Two perforations near the cardia	No data	No data
2	Bourlot 1900	42 F	Pain in epigastrium for several months. Acute pain since the day previous to examination	Two perforations: anterior wall and on posterior wall; symmetrically placed	Exploration late Ulcer not found	Died
3	Bott 1876	36 F	Intermittent dyspepsia for three years. Then suddenly severe pain over the entire abdomen	Two perforations on lesser curvature near cardia exactly opposed to each other	No exploration	Died: gastric contents free in abdomen. Adhesions to posterior wall of stomach.
4	Brentano 1906 (Case 1)	22 F	History of ulcer for two years. Then suddenly acute pain	Two perforations; anterior wall of greater curvature, and on posterior wall, near lesser curvature	No exploration	Died eight and one-half days after perforation
5	Brentano (Case 5)	23 F	Symptoms for six or eight weeks. Then suddenly acute abdominal pain	Two perforations; anterior wall near lesser curvature, and another large ulcer near by with small perforation	No exploration	Died
6	Brentano (Case 12)	80 F	No data	Two perforations 5 cm. apart on anterior wall, near pylorus and lesser curvature	No exploration	Died
7	Brentano (Case 20)	75 M	Gastric symptoms for three months. Patient brought to hospital moribund	Four perforations of various sizes on the upper wall.	No exploration	Died: a fifth ulcer found near the pylorus
8	Brentano (Case 48)	29 M	Symptoms of ulcer for twelve years. Then suddenly acute pain in abdomen	Two perforations; anterior wall of upper border, and on posterior wall	Explored two days after perforation. Anterior perforation closed	Died: second perforation found at necropsy
9	Brooks 1890-1891	32 F	Dyspepsia for some time. Then suddenly acute pain	Two perforations; anterior wall, middle and 1.5 cm. below lesser curvature, and on posterior wall opposite, larger and nearer pylorus	Exploration	Died
10	Currie, 1896		No data	Two perforations near cardia	No data	
11	Demons 1897	16 F	Abdominal pain and vomiting for several months. Then suddenly acute pain.	Two perforations; posterior wall, round and free from induration, and on anterior wall opposite. Both near cardia	Exploration twenty-one hours after perforation. Anterior perforation closed	Died: second perforation found at necropsy. Possibility of trauma was suggested

REVIEW OF THIRTY-TWO CASES OF MULTIPLE GASTRIC ULCERS REPORTED IN THE LITERATURE AND ONE FROM THE MAYO CLINIC—*Continued*

Case	Author, Year	Age, Sex	Symptoms	Description	Treatment	Remarks
12	Diriart and Apert 1896	F	No symptoms until perforation. Then sudden onset of acute pain two hours after a heavy meal	Two perforations; anterior wall, and posterior wall. Exactly opposite and same size	Exploration, ulcers not found	Died: appearance of the perforations suggested a bullet wound
13	French 1907 (Case 8)	35 M	Known to have had ulcer for many years; many hemorrhages	Two perforations; anterior wall, small hole in a large ulcer near pylorus, and on anterior wall, acute ulcer near cardia	Exploration twenty-four hours after perforation. Both found and sutured	Recovered. In good health eighteen months after operation.
14	Jayle 1891	20 F	Violent pain in left hypochondrium and vomiting	Two perforations; anterior wall, small perforation near middle and 3 cm. below lesser curvature, and on posterior wall opposite	No exploration	Died: perforation diagnosed but condition too poor to justify exploration
15	Keays 1903	16 F	Indigestion for one year. Two previous attacks of severe pain and present attack	Two perforations; large ulcer near cardia and lesser curvature, and on posterior wall opposite, smaller with some adhesions	None	Died twenty-four hours after perforation and before being seen by physician. Scar of a third ulcer on the posterior wall
16	Koerber 1906		No data	Multiple perforations near middle of posterior wall	Exploration but perforations not found	Died: perforations found at necropsy
17	Körte 1906 (Case 7)	17 F	No symptoms previously until sudden onset of severe pain in abdomen	Two perforations; anterior wall near lesser curvature, and on anterior wall near by	Exploration ten hours after perforation. One perforation closed	Died three days after operation. Ulcer on anterior wall showed induration
18	Körte (Case 8)	21 M	History of ulcer for one year. Then suddenly severe pain and collapse	Two perforations 1 cm. apart, midway between cardia and pylorus, near lesser curvature	Exploration seven hours after. Both perforations closed and gastroenterostomy	Recovered
19	Lyell 1898	19 F	Symptoms of ulcer for two weeks. Hematemesis five days previously	Two perforations; anterior wall 0.6 cm. in diameter, and on posterior wall opposite and near pylorus; larger and without adhesions	No exploration	Died
20	Mauclaire and Eschbach 1904	29 F	Abdominal distress for two years. Acute pain in left side of abdomen. Vomited six hours before admission	Two perforations; anterior wall and on posterior wall, both near cardia and opposite each other	Exploration nineteen hours after perforation, attempted closure of anterior perforation	Died three days after operation. Second perforation found at necropsy
21	Mikulicz 1889	17 F	Symptoms of ulcer for six months. Then suddenly acute pain	Two perforations; anterior wall, middle, near the pylorus, and on posterior wall	Exploration thirty-six hours after perforation. One perforation found	Died: second ulcer found at necropsy

REVIEW OF THIRTY-TWO CASES OF MULTIPLE GASTRIC ULCERS REPORTED IN THE LITERATURE AND ONE FROM THE MAYO CLINIC—*Concluded*

posterior wall | | foration. One perforation found | found at necropsy

REVIEW OF THIRTY-TWO CASES OF MULTIPLE GASTRIC ULCERS REPORTED IN THE LITERATURE AND ONE FROM THE MAYO CLINIC—*Concluded*

Case	Author, Year	Age, Sex	Symptoms	Description	Treatment	Remarks
22	Mitchell 1900	25 M	History of dyspepsia, then violent pain with vomiting	Two perforations; anterior wall near pylorus, 0.4 cm. in diameter, and near the cardia	Exploration, perforation on anterior wall sutured	Died: second perforation found at necropsy
23	Page 1898	22 F	No symptoms until sudden onset of acute pain and vomiting	Two perforations; anterior wall close together; one 2 cm. in diameter, the other 1 mm.	Exploration, both perforations found and closed	Recovered
24	Parker		No data	Two perforations close together near cardia		
25	Rabagliati 1895		No data	Two perforations; anterior wall and on posterior wall	Exploration, perforation on posterior wall closed	Died: second perforation found at necropsy
26	Richardson 1900	27 F	Gastric symptoms with vomiting for six weeks. Tenderness for one week, then suddenly severe pain	Two perforations; anterior wall at juncture of middle and upper third of each axis, and on posterior wall opposite; perforated through center	Tube stitched into perforation through anterior wall	Died: second perforation found at necropsy
27	Scully, 1918		No data	Two perforations		
28	Scully		No data	Two perforations		
29	Steele 1895	21 F	History of ulcer for six months. Then suddenly severe pain and shock	Two perforations; anterior wall left of median line, between greater and lesser curvatures, and on posterior wall opposite	Exploration and suture of perforation on anterior wall nineteen hours later	Died three and one-half hours after operation. Second perforation found at necropsy
30	Stelzner 1889 (Case 2)	Young F	Symptoms of ulcer followed by acute pain	Two perforations	Exploration forty-eight hours later. One perforation sutured	Died four days after operation. Second perforation found at necropsy
31	Vergely 1881	43 F	Old gastric complaint, then suddenly acute pain in the epigastrium with distention and tenderness	Two perforations; anterior wall 5 cm. from pylorus, and on the posterior wall near the cardia	No exploration	Died: ulcers larger than the perforations. Ulcer on posterior wall the older
32	Vianny 1900		No data	Three perforations adjacent to each other, near the pylorus		
33	Mayo Clinic 1926	18 M	Mild symptoms for three weeks. Then moderately severe pain thirty-two hours prior to admission	Two perforations; anterior wall near cardia and on posterior wall almost exactly opposite	Exploration and both perforations found and closed	Recovered. Symptoms relatively mild. Well one and one-half months after operation

multiple lesions were present are not mere coincidences.

This case is of special interest because (1) the patient was younger than most patients with gastric ulcer; (2) the ulcers were situated in the fundus of the stomach, close to the greater curvature; (3) the patient did not have the typical symptoms of a perforated viscus and from his history it is impossible to state when perforation occurred, but it must have been several hours before operation, and (4) it is the only case in the literature in which the ulcers were symmetrically located and the patient recovered. In the three other cases of multiple perforated ulcers in which the patient recovered, the ulcers were on the anterior wall and in two of them the perforations were probably from a single ulcer.

CONCLUSION

Although the occurrence of multiple perforations in the stomach is not common, the possibility of such a multiplicity of lesions must always be borne in mind when one is dealing with perforated ulcers, and both walls of the stomach should be thoroughly examined at the time of the operation.

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THE HOSPITAL LIBRARY SERVICE*

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St. Paul is fifteen years older than Minneapolis and, having been born first, has grown up first; and one evidence of its adult years is its prior adoption of the hospital library service. Its influence in this promotion has gone far and wide. Its example has been followed by its Sister City and it has extended to the University of Minnesota, where, through the agency of a small group of people interested in St. Paul's experience, a five-year course for the hospital librarian has been outlined. And the influence of this movement has extended to the American Hospital Association which has officially approved this course. New as the hospital library service is, its establishment in so large a number of St. Paul hospitals proves its recognized value and guarantees its permanence.

This work is the function of a specially trained librarian; for, self-trained or school-trained, the need of a special training is quite clear. She must have not only a knowledge of books, but a knowledge of human beings, and of human beings who are sick and suffering, or recovering from the consequences of illness. It is not only a knowledge of library administration, but of hospital organization she needs. Difficult as the task is, she has to serve two masters—the library and the hospital.

True, there are some other people concerned in the promotion of this work who need some training, too, but I shall talk about them presently.

The hospital librarian has a special leverage of influence, of which she should take advantage, in the fact that not only the patients, but the administrative force, the interne staff, and the nurses may be included among her beneficiaries. She has a particularly good work to do in relieving the tedium of hospital routine, in easing the burden of hospital duty for the hospital worker by the recreation of reading.

Reading is a form of occupational therapy, although it works with its own peculiar technic. The hospital librarian occupies the minds rather than the muscles of her patients. She nurses their minds, in fact, and in doing it she proves herself an intelligent sister of the nurse. Said a woman, convalescent enough to be propped up in bed and to read for a couple of hours, as she finally laid down her book—"Well, I had forgotten I was ill." One cannot forget that one is ill without being better as a result. And her nurse, as well as she, was benefited, rested, by that lapse of memory of pain and incapacity. These two nursing sisters had held up each other's hands.

The hospital librarian is necessarily, in the service of her clientele, a book-loving, book-reading, book-dispensing missionary. Whether they know it or not, they are lifted by her influence. Every one of them who has not been a reader and becomes, through her ministration, a lover of reading, is a convert to a new faith and carries its gospel far. Reading is as contagious as it is a remedial practice. Said an old washerwoman, whose husband had returned from a long hospital residence: "I don't know what all they did to him down there—he just reads the evenings through and it's difficult to get him to bed." "And," came the query, "he's the better for it, isn't he?" "Well," she said, "he's more livable to live with!" There's no better achievement than to be "pleasant to live with."

The administrative and the clinical staff of the hospital may be, should be, the allies of the librarian. She is doing institutional service. They should enlarge her place in the institution. She is serving their patients—they should help her to understand them. They, in their turn, should learn the uses of reading to the sick. They should sit at her feet and find out the values, the ministry, the therapy of books. And they have a therapy of their own. If there is—and we know there is—know it nowadays as we never have before—a relationship of influence between mind and body, between the flesh and the spirit, it is a relationship of influence that works both ways. For this cause, the hospital librarian must be something of a diagnostician, if not of disease, at least of the physical and mental condition of the patient. She has to prescribe—to prescribe books. And there are books that are stimulants, that are tonics; books that are sedatives, that are hypnotics; books that are mental nutrients, that are mental purgatives; books that are recreative, educative, and a number of other things

*An informal talk to hospital and library workers at the St. Paul Public Library, November 27, 1926.

besides. And let us not forget that there are books that are depressants, books that are poisonous. Even the covers of books are educative; we may absorb values from them as well as from their pages. Anyone who has handled large numbers of books thoughtfully knows this. He has gained something from the very atmosphere of books.

We have noted that the hospital librarian has to establish relations with the hospital administration, the hospital staff, the interne force, the nursing service, the social service, as well as with the patients. She has to work with and through all of these. She works for them, but she must work with them. It will not take them long to learn, if they are open to suggestion, the benefits she confers upon them all, from the patients in the wards to the superintendent in the office. She is not alone in her obligations to them. They have obligations to her. She is doing them service; she has a right to look for a return. She is a civilizing, an educative, a remedial agent among them. Let them expand to and enlarge her influence.

Like every new work, her job is a difficult one. It is not, as yet, well oriented. It has had to make its own place. It has had to overcome prejudice, criticism, skepticism, inertia, that stultifying, paralyzing fetter which leads us to abhor change, to love to limit our feet to the well-trodden ways of men.

It is time that our appreciation of the hospital librarian and her work be made practical. She needs coöperation, encouragement.

How can you hospitalizers give it to her? What is your part to play in her game—a game hard to play and difficult to win.

Well, first of all, give her suitable housing for her books—the tools of her work—a roomy set of well-built shelving, with glass doors and a reliable lock to them. Make it big enough to grow into.

Give her a good-sized, well-finished table upon which she may sort over her selected books for bedside distribution; upon which, too, she may lay out a generous assortment of current periodicals, which you should supply—and at very small annual cost.

Give her, not a dark, musty corner in the basement, not a mere cupboard in some out of the way place, but a warm, sunny room, of adequate size, to serve as a reading room, in which you may put the book-shelves and the table and a few chairs, some of them comfortable, lounging chairs, in which ambulant patients may sit. Nurses will be glad to lead them there to rest, to read awhile, to look at pictures—to the childhood lore of which sickness often makes one easily revert.

Get your woman's auxiliary—every hospital should have one—to provide some bright chintz curtains, a table scarf or two, a couple of green-shaded reading lamps, to give the place a homelike atmosphere and a touch of grace. Encourage the hospital family to come there, at the librarian's hour, to look over her books and select their own reading.

Then, another thing, hospital administrators, put a small item in your annual budget, year by year, to replace the books that are dirty and worn with your institutional use of them—the books that your patients and your staff lose or forget to return. You are served by a public library, you say? Yes, and some gratitude is due for that service. It provides you with a hospital librarian, and some messenger or delivery labor and with some books. But public money is always meager money. There is not enough to go around. It does not go far in buying new books. You all know that. And books, almost unbelievably, wear out.

Encourage its service to you; keep an encouraged heart in your librarian. Make her work worth while. Twenty-five, fifty or a hundred dollars a year, according to the size of the hospital, will help to give you the use of more books and of better books all around.

And doing all this, you will encourage in the minds of your readers a respect for books. Ruskin once said there were three things most deserving of respect—a child, a tree, and a book. And respect for books cultivates a love of books. It is quite easily cultivated. Readers always read above themselves. I think Herbert Spencer was responsible for that saying. It's true, although its truth almost frightens one, because if the books some of us read are above us, some of us are pretty low down. Nevertheless, growth in the appreciation of books—and we may observe that growth in the individual, the family, or the community—assures one of the contagion of the process—tells us once more that "good the more encouraged the more abundant grows."

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EDITORIAL

The Basic Science Law

On April fifth the Senate passed the Basic Science bill providing for the establishment of a State Board of Examiners in the Basic Sciences. Three days later the bill was also passed by the House of Representatives, and the Governor's signature affixed April twelfth made the bill a law to become effective May first. The bill as finally passed provides for a Board of Examiners in the Basic Sciences of five members, two to be full time paid professors (or associate or assistant professors) not actively engaged in the practice of healing, who shall be appointed from the University of Minnesota or any university or college in Minnesota accredited by the University of Minnesota, one physician and surgeon, one osteopath and one chiropractor. As a result the fundamental requirements of all who begin practice of the healing art in Minnesota in the future are raised.

The new law provides in brief that all persons not now qualified by the three existing Boards, Medical, Osteopathic and Chiropractic, must pass examinations in the Basic Sciences (anatomy, physiology, pathology, bacteriology, hygiene and, after 1931, chemistry) or take down their shingles.

Licensed physicians, osteopaths and chiropractors must register with the new Basic Science Board before October first and pay the fee of $3.00. They will receive a certificate showing it was issued for the purpose of registration, which within thirty days following issuance must be recorded with the clerk of the District Court in their respective counties.

In the future every physician, osteopath and chiropractor must register yearly with his respective State Board, paying a fee in 1928 and 1929 of $5.00 and thereafter $2.00 per annum. The income from such fees is to be used to defray Board expenses and to further law enforcement. Inspectors may be employed to search out offenders. The various Boards will undoubtedly exert their prerogatives and the money will be well spent. The new law specifically provides that the burden of proof lies with anyone accused of practicing without a Basic Science Board license.

Provision is wisely made that reciprocity with other State Medical Boards is not affected and certificates from the National Board of Medical Examiners will continue to be accepted in Minnesota.

Physicians in the employ of the Army and Navy and the United States Public Health Service are specifically exempt from the new law. A long list of additional exemptions includes dentists, nurses, midwives, etc., providing they limit themselves to their proper scope of activities.

Simultaneously the Minnesota Medical Practice Act which had fallen into a state of innocuous desuetude was amended. The main alterations consisted in the reduction of the number of members in the State Board of Medical Examiners from nine to seven. As a vacancy occurs the Council of the State Medical Association will recommend to the Governor three physicians from whom he may select one.

In the act as amended the terms "immoral, dishonorable or unprofessional conduct" for which the Board may refuse to grant or revoke a license are thus amplified:

"The words 'immoral, dishonorable or unprofessional conduct,' as used in this section shall mean: (a) Procuring, aiding or abetting a criminal abortion; (b) advertising in any manner either in his own name or under the name of another person or concern, actual or pretended, in any newspaper, pamphlet, circular or other written or printed paper or document, professional superiority to a greater skill than that possessed by fellow physicians and surgeons, or the positive cure of any disease, or the curing of venereal diseases, the restoration of 'lost manhood,' the treatment of private diseases peculiar to men or women, or the advertising or holding himself out to the public in any manner as a specialist in diseases of the sexual organs, or diseases caused by sexual weakness, self abuse, or excessive indulgences, or the advertising of any medicine or any means whatever whereby the monthly periods of women can be regulated or the menses re-established, or being employed by or in the service of any person, concern, actual or pretended, so advertising, or in any manner creating a fear of private diseases; (c) the obtaining of any fee, or offering to accept a fee on the assurance or promise that a manifestly incurable disease can be or will be cured; (d) willfully betraying a professional secret; (e) habitual indulgence in the use of drugs; (f) conviction for willfully violating any narcotic law; (g) conviction of offense involving moral turpitude; (h) conviction of a felony."

The Basic Science law passed in Minnesota is undoubtedly one of the most important laws ever passed in the interest of public welfare and the best that could be obtained with such a strong element in the legislature and among the public favoring quackery in medical practice. It is felt that a division of responsibility in determining qualifications for practicing the healing art will work out more harmoniously than if the Board were constituted as originally planned. If provisions of the new law are ineffectual it must be remembered that it is easier to modify an existing law than to institute new legislation.

The profession throughout the state has shown itself greatly pleased at the outcome. The success was due to concerted action by many physicians throughout the state. The legislative committee of the Association and especially its chairman deserve the gratitude of the members for their unselfish hard work with a legislature which fortunately contained a sufficient number of members who appreciated the importance of educational qualifications in the interest of the public.

Acidosis and Alkalosis

The term acidosis was first employed in connection with acetone formation such as occurs in diabetes and starvation. Before the discovery of the acetone bodies, Walters (1877) found that when an acid of any kind was injected into animals it led to the excretion of an abnormally large proportion of urinary nitrogen in the form of ammonia. This discovery, together with the fact discovered by Hallervorden in 1890, that the diabetic excreted a disproportionate amount of ammonia, led to the suggestion that some organic acid must be formed in large amounts in diabetes, a suggestion that prompted the search for and led to the discovery by Stadelmann and Minkowski of beta-hydroxybutyric and butyric acid in diabetic urine (1884). The term "acidosis" as first employed seems to have implied nothing more than increased excretion of ammonia, the result of the formation of abnormal organic acids.

In 1917 Van Slyke and Cullen developed a simple method of measuring the carbon dioxide and bicarbonates of the blood plasma. The accumulation of non-volatile acids, such as lactic acid or acetoacetic acid, may be compensated to a limited extent by the buffers of the plasma, especially bicarbonate, and by the excretion through the lungs of volatile carbonic acid. L. J. Hasselbach, Yendall Henderson and Van Slyke showed that a definite relation normally exists between the amount of sodium bicarbonate, the amount of carbonic acid and the PH (a reciprocal index of hydrogen ion concentration or reaction) of the blood. Anything that will raise the sodium bicarbonate or lower the carbonic acid will tend to raise the value of the PH (increased alkalinity) and anything that will lower the sodium bicarbonate or raise the carbonic acid will lower the PH (increased acidity). The term acidosis came to be applied to conditions in which

the bicarbonate content of the blood plasma was decreased even when the reaction of the blood, or PH, was maintained at normal by the buffering systems of the blood (compensated acidosis), as well as to conditions in which the actual reaction of the blood was shifted to the acid side because of the inadequacy of the buffers (uncompensated acidosis (PH decreased)). The terms compensated alkalosis and uncompensated alkalosis were introduced to express the converse conceps. The PH values found in the venous blood plasma of normal resting adults falls between 7.35 and 7.43; values below 7.32 (acidity) and above 7.47 (alkalinity) are considered abnormal (Myers and Booher).

Clinical conditions that lead to acidosis are (1) accumulation of carbonic acid by asphyxia; (2) formation of lactic acid, by muscular exertion; (3) administration of acid and acid salts; (4) formation of acetone bodies, in diabetes, in low carbohydrate dieting or in starvation; and (5) formation of other organic acids in nephritis, in diabetes, in certain toxemias. The acidosis may be compensated by the buffering systems of the blood, in which case the actual reaction of the blood is unchanged; or it may be uncompensated, in which case PH determinations will be low (increased acidity). The extreme degrees of uncompensated acidosis are most common in diabetes. This is apparent from Magnus-Levy's estimation of the amount of oxybutyric acid that may accumulate (200 to 300 gm.) as well as from the estimate of total acid made by Bock and his associates in four cases of diabetic coma (71 to 103 gm.) expressed as acetic acid. Both Higgins and Adair observed PH values as low as 7.93 in one of these cases. That organic acids other than the acetone bodies are responsible for lowering the PH in some cases of diabetic coma appears from their study as well as from reports of Starr and Fitz. Insulin administered in such cases may clear the body fluids of acetone without completely restoring the neutrality of the blood; alkali (sodium bicarbonate) must be given to effect this.

Conditions that may lead to alkalosis are: (1) overventilation of the lungs, with consequent decrease in the carbonic acid of the blood; (2) fever; (3) injection of alkaline salts (sodium bicarbonate); (4) intestinal obstruction; (5) deep *x*-ray treatments.

Hypernea, overventilation, is usually encountered in conditions of acidosis (for instance, Kussmaul's "Grosse Atmung" seen in diabetic coma) and is a compensatory mechanism ridding the body of carbonic acid and thus leaving bases behind to combine with non-volatile organic acids. Serious symptoms of alkalosis may be provoked, however, by voluntary overbreathing.

Koehler has reported PH and carbon dioxide determinations in cases of fever, the PH reaching 7.60 in one of his cases. He attributes this to overventilation.

Administration of alkaline salts, as practiced in the treatment of peptic ulcer and other diseases, has occasionally led to toxic symptoms associated with renal damage.

McCann in 1918 showed experimentally that pyloric obstruction resulted in alkalosis (and tetany). This, as well as the depression of the blood chlorides which accompanies it, was attributed at first to loss of hydrochloric acid by vomiting, but Haden and Orr, 1923, found a fall in chlorides and alkalosis in animals in which vomiting had been prevented by obstruction of the cardia, and McVicar reports that toxemia has appeared clinically with very little vomiting, and that conversely, prolonged and frequent vomiting is not always accompanied by a fall in chlorides.

Hussey observed uncompensated alkalosis in rabbits following deep *x*-ray therapy and Myers and Dooher report a similar observation in a patient.

Kast, Myers and Schmidts have reported twenty cases of uncompensated alkalosis with determinations of the plasma carbon dioxide and the PH. The direct cause of alkalosis in ten of these was sodium bicarbonate administration; four were cases of peptic ulcer being treated by Sippy's method; one was a case of diabetes; two were cases of nephritis; in two cases alkali was administered after cholecystectomy, and in one after oöphorectomy. In the other cases vomiting and *x*-ray treatment and fever were considered responsible. There is evidence that certain patients are predisposed to alkalosis because their kidneys do not eliminate alkali readily. In the case of diabetes the blood sugar was 0.288 per cent and the urine contained acetone, yet the PH, after alkali treatment, reached the remarkably high value 7.60. This patient died, presumably from alkalosis, although in diabetic "acidosis." Cyclic vomiting is usually associated with the production of acetone bodies (starvation) but

loss of hydrochloric acid may result in alkalosis; and here again a condition of alkalosis may be found accompanied by acetone formation, unless the kidneys are able to compensate by eliminating the necessary amount of base.

Alkalosis is frequently not recognized. It may be overlooked entirely or mistaken for acidosis with the unfortunate result that alkalies are used for treatment. The chief symptoms are headache, lassitude, nausea, vomiting, fever, and in severe cases tetany, but the suspicion of alkalosis should be entertained with all patients receiving alkalies or with abdominal conditions that suggest intestinal obstruction. An early study of the chemistry of the blood (high carbon dioxide combining-power, low chlorides, high urea) is indispensable for correct diagnosis. The treatment recommended by McVicar consisting of the intravenous injection of hypertonic solutions of sodium chloride and glucose seems to be of great benefit. R. M. W.

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Improving Hospital Service

"The statistics published this week give some idea of the tremendous place now occupied by hospitals in medical education and medical practice" (Editorial in A. M. A., March 12, 1927). Minnesota has had a most notable share in this development; but it is doubtful whether the medical staff of many of our hospitals fully recognize either its responsibilities or amazing opportunities. Hospitals can be judged in this regard quickly and fairly accurately by reviewing the staff's handiwork in record keeping, the kind and quality of staff meetings, and the autopsy percentages on hospital deaths. It must be granted of course that a total failure to comply with any and all of these standardizing requirements does not necessarily deprive many individual patients of the very best of care. It is indeed this *successful individualism* which stands most in the way of effective group study: of bringing into the hospital one of the most effective agencies existing today for the absolutely essential continuous study course for which each doctor must set aside time.

The writer has visited about fifteen well known hospitals in the Middle West in the past month. Hospital charts were called for and reviewed. Record room attendants very noticeably presented to the visitor their best ones, before a request for the worst was made. It may help the American College of Surgeons to be reminded that the surgeons' blanks are apt to show the greatest lapses and the most astounding abridgments. Experiences show that when inferior records are discussed with their makers, it transpires that the doctor has a vast array of substantial and circumstantial evidence in his head; but in that location it is far from permanent even for him and is useless for any reviewer. The present demand that hospitals must show autopsies in at least 10 per cent of deaths before they can be accredited for internes, is an acknowledgment that hospitals given high ratings need yearly checking. What is to be said of hospitals of 250 to 300 beds that have been getting only six to ten autopsies a year? It is not true that private patients refuse autopsy permission. The results at the Mayo Clinic alone disprove such a contention.

Few hospitals too are living up to such valuable features of chart making as "final summaries" and record committee revisions. The situation for teaching in our hospitals is far from bad. Indeed the staff is all set. A splendid foundation is already built. Nursing education and chart building is uniformly superb. It remains largely for medical staff members to lead the way. They have not far to go but the step is a difficult one—it requires a little immediate sacrifice of "splendid isolation" to attain that enormous advantage that accrues "where everybody's cards are on the table" and the goal is "the whole truth, and nothing but the truth, so help me God." E. L. T.

The 1928 A. M. A. Convention

The American Medical Association is to be invited to hold its annual convention in Minneapolis in 1928. The excellent manner in which Minneapolis entertained the Association in 1913 is still fresh in the minds of those who visited Minnesota at that time. Minneapolis with its greatly increased hotel facilities and its new $3,000,000.00 Auditorium is excellently equipped for holding this convention. The

Hennepin County Medical Society has well under way elaborate plans for demonstrating to the delegates who assemble in Washington this month the advantages to be obtained by meeting in Minneapolis in 1928.

Every member of our State Association should be interested in obtaining the convention. This proposition should be considered as a state-wide rather than a purely local affair. The members of the Ramsey, Saint Louis and other county societies are in hearty coöperation with the Hennepin County Medical Society in an endeavor to bring the meeting to Minnesota.

It should be remembered that such an issue will be to the advantage of each and every one of us and we should unite wholeheartedly in extending this invitation.

The choice of a meeting place rests in the hands of the Board of Trustees and the House of Delegates. We would suggest that everyone who is in a position to do so write or personally interview the members of the Board of Trustees or House of Delegates with whom they are acquainted. The opportunities offered by our state should be emphasized. Our hospitals and clinical facilities, our university, our highways, lakes, scenery, and vacational facilities are unsurpassed. Minnesotans will have no hesitancy in assuring the governing body of the American Medical Association that no mistake will be made if Minneapolis is chosen as a meeting place in 1928. Let's go!

R. E. F.

MISCELLANEOUS

THE PHYSICIAN'S LIABILITY INSURANCE POLICY

Recently, one of the insurance companies operating in the State of Minnesota refused to renew a liability policy of a physician. The attorney of this company brought out some very interesting points that every physician should know.

"The policy in this case, was refused because the physician was not in the habit of taking the ordinary precautions that are expected of all medical men by the insurance company. The insurance companies find that it is impossible to permit men of this type to have policies at the regular rate as they then would be operating under a loss.

"In buying insurance, you pay for what you will receive as determined by the experience of the company. If you want more, it will be necessary to raise the rate. If all the physicians in the state, including the one whose policy was refused, were to be insured by us, your rate would have to be raised. In the case discussed the chief neglect was the failure to follow up serious injuries to which first attention had been given. I would always make a record of my first visit, and notation of my instructions to the patient—when and where he was to report. If he did not report at that time, I would send a registered letter with return card to him, informing him that he should report. This would be pretty good evidence in court that I had not neglected the case.

"There is also another important point, that whenever a patient declines to submit to proper treatment, or declines to obey the instructions of the attending physician, such attending physician should by all means endeavor to secure the signature of the patient, or the person representing the patient, to a statement of the orders or directions which they refuse to abide by, as an acknowledgment that the doctor had made such suggestions, or given such orders, and compliance was refused.

"This particularly applies to those cases where *x*-rays are required by the doctors, and the securing of same for any reason is refused by the patient; hospitalization is suggested by the doctor and refused by the patient, or those representing the patient; operations are advised by the doctor, and refused; further stay in the hospital is advised by the doctor, but refused by the patient, who insists on leaving; and particularly whenever the patient is leaving the hospital with drainage material in any sinus, the notifying of the patient of such facts should be entered on the hospital records, and the patient's signature obtained to same, thus making a permanent record of the fact that the patient left the hospital with full knowledge and a complete understanding of his exact condition, and the presence of the drainage material.

"Warnings given patients suffering from fractures in regard to any interference with the casts, splints or extensions applied by the attending surgeon should likewise be made a matter of record, with the signature of the patient, or the patient's representative, attached.

"Particularly in those cases where the physical condition or general health prohibits confinement in a cast, or the continued application of traction, and explanation of why such appliances were not used in treating the fracture is of the utmost importance in guarding against the successful prosecution of damage claims and suits later.

"The obtaining of the written consent of both the child, if of reasonable age, and the parent, or the husband and wife, to the performing of an operation and for the removal of diseased organs found during the operation, is likewise very important, if the doctors are to avoid the annoyance connected with defending those suits based upon an allegation of assault, and operation without consent, which are many times very embarrassing from a defense standpoint, for the reason

that in such cases the jury can take the word of the patient, or the patient's friends, or relatives, even though such testimony is wholly prejudiced and entirely false, and base a verdict thereon in the face of an absolutely clean record so far as the doctor is concerned, and the testimony of himself, his assistants, and even hospital employees, such as nurses, etc., to the opposite effect that a thorough understanding was arrived at prior to the operation.

"Many hospitals are now using a printed form of consent, and insist as a routine matter upon same being signed by the patient, and those representing the patient, prior to the performance of any operation by a member of the staff on a hospital patient, and this, if good for the hospital, is certainly fully as important for the protection of the doctor."

While these conditions exist as stated, it seems to be very simple to the insurance people. Yet, it seems to be very difficult for the average practitioner of medicine to understand. We as physicians, cannot understand why the doctor will take so many chances when a little extra effort in the matter of records will prevent so much trouble.

SOME MEDICINAL RECEIPTS OF THE BOIS FORT CHIPPEWAS

ALBERT B. REAGAN

The Bois Fort Indian Reservation, containing 107,519.43 acres, is situated 140 miles northwest of Duluth, Minnesota, and 38 miles south of Fort Frances, Ontario. It surrounds a beautiful sheet of shallow water of three-fourths of a township in area, known as Nett Lake. Its land is variable in condition of soil and possible fertility. One-half of it is swamp and is known to the Indians as "muskeg" land. The non-swamp eastern part is composed of rock ridges of the Couchiching formation, flanked with clay land covered with pine and hardwood forest trees. The western part, which is not covered with swamp, is a sandy region. Nett Lake and its tributary streams occupy the east-central part of the reservation and the Little Fork and Nett rivers cross it. The swamp areas are in the jungle state. The dry land is heavily timbered where not logged off, while wild rice grows in the shallow lake so that it looks like a vast wheat field in summer. The region is practically in the virgin state.

The Bois Fort Chippewas (Ojibwas), who occupy this region, are known by the name Sugwaundugahwininewug ("men of the dense wooded forest").

While doing research work among these Indians when I was Indian Agent at Nett Lake one of my Indian policemen was a medicine man by the name of George Farmer Ne-ba-day-ke-shi-go-kay. He was a man of influence among his people. He also had a sufficient knowledge of his language to be able to write down his thoughts in "Chippewa," though he had never been to any school so far as could be learned.

Once when at his place I accidentally discovered that he had a large note book. His little daughter gave it to me, and on opening it I saw writing in it, but in a language I did not recognize. After a good deal of persuasion, I succeeded in getting him to translate the words, when to my surprise I found that the writing consisted of medicine songs and medicinal receipts.

These were written in Roman script but with phonetic values similar to French. Mr. Farmer let me copy his notes and went over them carefully to see that I had a correct translation of same. The medicinal receipts I here give, as translated.

1. Receipt for medicine for pain in the stomach, also for fainting and trembling fits. If very sick or bad sore apply this medicine externally. Also for cuts, say with an ax, put this preparation on.

Make a tea of all the different roots and barks mentioned below by boiling or steeping same: Swamp spruce, sometimes called black spruce, upland spruce, the pussy willow, tamarack or black larch, Norway pine, white pine, kinnikinick (bearberry), and oak and all the trees that grow south of them. To this add a little sugar to sweeten it.

2. For a cut foot apply tea made from boiling together roots of the rose bush, bitterroot, and elm. A little of this tea is also taken internally for bleeding.

3. For a "bad-sick" stomach or bowels caused by eating too much or for constipation, drink medicine tea of horsetails and horsemint, boiled together.

4. For stomach trouble drink a cupful of tea, prepared by boiling together native peppermint, a rush pepper plant or Lizard's Tail (plant), Minnesota fern, and the roots of the crow berry and "slippery elm."

5. Another remedy for fainting and fits, also used as a blood medicine, is sarsaparilla tea, made from the leaves of this plant. This drink. This medicine is called "Eastern Medicine" by the Ojibwa, as it is the medicine of the Wabeno (Eastern) Society of that people.

6. Another general remedy: Take the roots of the swamp tea plant, kinnikinick (bearberry), a white poplar, and Balm of Gilead Poplar, and pound them to a pulp and stew into a tea. This tea apply to the afflicted parts by placing cloths on same and pouring the tea on the cloths so as to thoroughly saturate them. The pounded roots and bark when hot just from the steeping tray are also applied. This remedy is used much for rheumatism and kindred diseases.

7. The following medicine is to be given for "internal blood diseases": Boil the bark of the following trees and shrubs: white poplar, yellow poplar, white birch, yellow birch, large oak, small oak, small bearberry (kinnikinick), and large bearberry (kinnikinick). Drink the tea thus made.

8. For venereal diseases make a tea of the root-bark of the following trees: ash, oak, white elm, and sugar maple. Then add a little tobacco, after which place it on the south side of a tree far out in the woods. Then when cool, drink a cupful three times a day.

OBITUARY

Dr. Alexander Hamilton Barber

Dr. Alexander Hamilton Barber died March 9, 1927, at Minneapolis of heart disease at the age of of eighty-three. Dr. Barber was a civil war veteran, having been a member of Company C, 2nd Wisconsin, until wounded at Antietam. He obtained his medical degree at the College of Physicians and Surgeons, New York, about 1869. After practicing thirty years at Lancaster, Wisconsin, he practiced for several years at Waukesha before retirement.

Dr. Barber was one of the fine type of old family doctors. Competent and modest, he was a friend to all who knew him. Although he had the misfortune to lose his property in his old age, this did not spoil him. Always cheerful and happy, his influence was felt by his friends and acquaintances.

E. P. Lyon.

Dr. O. H. Urstad

Dr. O. H. Urstad died, at the age of 56, after a week's illness, at his home in East Stanwood, Washington. Death was due to angina pectoris.

Oscar H. Urstad was born in Christiania, Norway, December 24, 1870. At the age of 18 he left his native land and came to New York, later going on to Lake Mills, Iowa, where he held a clerical position in a drug store. In 1896 he began the study of medicine at Central College of Physicians and Surgeons in Indianapolis, Indiana.

Dr. Urstad came to Kiester, Minnesota, in 1900, where he practiced medicine and surgery for 20 years. He did his own surgery, owning and operating a small hospital. In 1920 he sold his practice to Dr. A. J. Henderson and moved to Minneapolis, where he became associated with Dr. C. J. Ringnell (until the latter's death). He was on the staff of the Swedish Hospital of Minneapolis.

In 1924 he moved to East Stanwood, Washington, where he established a large practice.

Dr. Urstad was an active member in medical societies. He was a member of his county and state medical associations, Southern Minnesota Medical Association and the American Medical Association. At East Stanwood he was affiliated with the Snohomish County Medical Society.

In 1907 Dr. Urstad went abroad for further study and took a postgraduate course in the Laege Kursus District, Norway. During the World War he was a commissioned Captain in the Medical Corps, being stationed at Greenleaf, Georgia.

Dr. Urstad was active in civic and religious work, being interested in any constructive enterprise which was for the good of the community. He was mayor at Kiester for several years and also served on the local school board. At Minneapolis he was a member of the Calhoun Commercial Club, the Odin Club, and was associated with the Scottish Rite of Masonry and the Shrine. He was a trustee of Central Lutheran Church. At East Stanwood he joined the Kiwanis Society and was a member of Our Saviour's Lutheran Church.

He is survived by his wife, and four children, and his aged parents. His two daughters are nurses, his two sons are at present at St. Olaf College, Northfield, taking the premedical course there.

OF GENERAL INTEREST

Dr. A. E. Anderson of Minneapolis will spend the summer months in Europe.

Dr. and Mrs. Theodore Tennyson of Minneapolis have returned from California where they spent the past two months.

Dr. Robert Schwyzer, formerly of Blackduck, Minn., has announced the opening of offices at 1508 East Lake Street, Minneapolis.

Dr. Allen K. Krause, of Baltimore, gave a Mayo Foundation lecture in Rochester on the evening of April 7. His subject was "Histogenesis of Tuberculosis."

Dr. Estes Hargis has returned to Rochester from traveling abroad on the J. William White Scholarship, and will spend several more months on service in The Mayo Foundation.

Steps are being taken to build a new $50,000 fireproof building to replace the former edifice of the Children's Preventorium at Owasso, Minnesota, which was destroyed by fire.

Dr. and Mrs. W. L. Smith of Minneapolis sailed April 23 from New York for Europe, where they will travel in France, England, Switzerland and other countries before returning.

Dr. Henry D. Diessner of Minneapolis will sail for Vienna in April for several months' study in skin and genito-urinary diseases. He will return to his practice in Minneapolis in the fall.

Dr. E. J. Palomeque has been granted a leave of absence of six months from his fellowship in The Mayo Foundation. He will spend several months visiting clinics in Europe before his return to Rochester.

Dr. and Mrs. T. L. Birnberg and little daughter sailed April 6 for various points on the Mediterranean. Dr. Birnberg will engage in further postgraduate study in Vienna and Berlin before returning to St. Paul to resume his practice there.

Dr. H. J. Prentiss, Professor of Anatomy, University of Iowa, gave a Mayo Foundation lecture in Rochester on the evening of April 16; his subject was "The Female Perineum." On the afternoon of April 16 he gave a lecture on "The Male Perineum."

A formal invitation to the American Medical Association to hold its seventy-ninth annual meeting in the new municipal auditorium in Minneapolis in 1928 will be presented by Minneapolis physicians at the annual meeting of the Association in Washington, D. C., this month.

Work has been started on the new $50,000 fraternity house on the University of Minnesota campus, which will be owned by Phi Sigma Rho. The house, which will accommodate thirty-two students, is scheduled to be finished September first. It is located opposite Millard Hall.

Dr. and Mrs. John A. Lyng and son of Minneapolis will leave the first of this month for an extended trip in Europe. Dr. Lyng will visit the surgical clinics of England, Scotland and the Scandinavian countries and will also spend considerable time in the surgical clinics of Vienna and Paris.

Dr. Adelaide Woodard, medical missionary at Fatehgarh, India, gave a series of lectures in Minneapolis recently on the health and educational problems now facing the missionaries working in India. Dr. Woodard practiced in Minneapolis two years previous to her departure for India thirteen years ago.

Mrs. Jennings C. Litzenberg, wife of Dr. J. C. Litzenberg of Minneapolis, died Friday, April 15, at the Abbott hospital, Minneapolis, following a short illness. Mrs. Litzenberg was a leader in civic and musical circles in Minneapolis and was a member of the Republican state central committee at the time of her death.

Dr. John A. Pratt, Assistant Professor of Ophthalmology and Oto-laryngology, of the Medical School, University of Minnesota, has returned from an extended visit on the Pacific Coast. While there he lectured before the Los Angeles, San Francisco, Portland and Seattle Ophthalmological and Oto-laryngological Societies on "Sinus Diseases and their Intranasal Surgical Treatment."

Glen Lake sanatorium at Oak Terrace, Minnesota, has been formally approved by the American College of Surgeons, a signal honor inasmuch as it is one of two such sanatoria to receive approval from this body so far. Requirements for approval include those with regard to the type of building, the method of diagnosis and treatment, the keeping of records and the entire organization. The other sanatorium approved is one located in New Zealand.

Dr. J. F. Norris, assistant superintendent of the state hospital for the insane at St. Peter, has resigned his position there to join the staff of the Pennsylvania state hospital at Wilkes-Barre, of which Dr. George T. Baskett, formerly superintendent of the Willmar state hospital, is now the head. Dr. Williard J. Hewson has been appointed to succeed Dr. Norris at the St. Peter hospital. Dr. Hewson has been a member of the staff since December, 1925.

The addresses given at the Northwest Conference of Child Health and Parent Education recently held in Minneapolis are to be published in book form at an estimated cost of $2.00, it has been announced. The educational influence of this conference, it is felt, may be widely extended through the individual or group study of these addresses presented by leading authorities in child study and parent education. Advance subscriptions for the book are being invited. Members of the profession desiring to obtain copies of the book should communicate with Dr. R. O. Beard, Secretary, 625 Sexton Building, Minneapolis, Minnesota.

The new Webber Hospital and Clinic in West Duluth was opened in March. Associated in the new institution are the following: Dr. Webber, chief surgeon and dean; pediatrics department, Dr. S. N. Litman, a native of Duluth and graduate of the University of Minnesota medical school; internal medicine department, Dr. O. L. McHaffie, graduate of the North Dakota university, and the medical school of Northwestern university, and Dr. Arnold O. Swenson, graduate of the medical school of the University of Minnesota, both now located in West Duluth, and Dr. Paul Swenson, graduate of the University of Minnesota medical school, now at the Proctor hospital; dental department, Dr. Harold S. Woodruff, graduate of the Minnesota "U" dental school.

The following physicians have been assigned recently as fellows in The Mayo Foundation:

Majoring in Surgery.—Dr. C. Grant Bain, Tofield, Alberta; Dr. Hamilton Cooke, Minneapolis, Minn.; Dr. Finis G. Cooper, Huntington Park, Calif.; Dr. David C. Ditmore, Buffalo, Ill.; Dr. Wilmot C. Foster, Portland, Oregon; Dr. C. Oliver Heimdal, Deerfield, Wis.; Dr. Wilbur W. Holland, Aberdeen, Md.; Dr. George E. Malmgren, St. Paul, Minn.; Dr. James M. Marshall, Tooele, Utah; Dr. Hamline Mattson, Minneapolis, Minn.; Dr. David Metheny, Philadelphia, Pa.; Dr. H. T. R. Mount, Springfield, Ont.; Dr. Edward H. Ray, Auburn, Ala.; Dr. Lloyd T. Sussex, Hope, N. Dak.; Dr. Fred R. Thompson, Chicago, Ill.

Majoring in Medicine.—Dr. Harry A. Daniels, Eveleth, Minn.; Dr. David G. Ghrist, Hollywood, Calif.; Dr. Harry M. Margolis, Pittsburgh, Pa.; Dr. Wallace T. Partch, Greenacres, Wash.

Majoring in Ophthalmology.—Dr. William A. S. Magrath, Wynyard, Sask.; Dr. James S. White, Covington, Ga.

Majoring in Neurologic Surgery.—Dr. William A. Bunten, Worland, Wyo.

Majoring in Pediatrics.—Dr. Roland E. Nutting, Minneapolis, Minn.

Majoring in Neurology.—Dr. Curtis T. Prout, Portchester, N. Y.

Majoring in Pathology.—Dr. Dale L. Martin, Orland, Calif.

At the annual meeting of the Federation of American Societies for Experimental Biology held at Rochester, New York, April 14, 15 and 16, the following Minnesota physicians appeared on the program:

M. H. Power, Rochester: A study of the blood by vivi-dialysis.

Jesse L. Bollman and Frank C. Mann, Rochester: Chronic duodenal ulcer in animals with Eck fistula on certain diets.

F. H. Scott, Minneapolis: Decorticate rigidity.

Edward C. Kendall and Edgar J. Witzeman, Rochester: Potentiometric studies of the oxidation and reduction of epinephrin and related compounds.

L. G. Rowntree, Rochester: Studies in experimental tuberculosis.

Walter C. Alvarez, Rochester: Motion pictures of gastro-intestinal peristalsis.

Mary Whelan, Minard F. Jacobs and Norman M. Keith, Rochester: The action of ammonium salts.

Irene Sandiford and Kathleen Sandiford, Rochester: The effect of thyroxin on a subject on high carbohydrate diet.

Carl H. Greene, Martha Aldrich and L. G. Rowntree, Rochester: Studies in the metabolism of the bile acids.

F. C. Mann, Charles M. Wilhelmj and Jesse L. Bollman, Rochester: The specific dynamic action of glycocoll and alanin with special reference to the dehepatized animal.

Samuel Amberg, Rochester: Filtration through living membrane.

F. F. Nord, Minneapolis: On the mechanism of enzyme action.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

A tentative program has been adopted for the 59th annual meeting of the Minnesota State Medical Association which will be held at Duluth, June 30, July 1 and 2. Speakers are of unusual prominence, and the program indicates that it will be one of the best of the many successful programs held by the State Association.

Dr. M. L. Harris of Chicago has agreed to speak on the subject of Contract Practice at the Medical Economics meeting Thursday evening. Dr. Harris has been for years the chairman of this committee of the American Medical Association and will bring authoritative information concerning this vital subject.

The program has several symposiums which will appeal to every member of the profession. Among these are:

Symposium on Gynecology
Dr. J. O. Polak, Prof. of Obst. and Gyn., Long Island College Hospital, and
Dr. C. H. Mayo and Dr. J. C. Litzenberg
Symposium on Gallbladder and Liver
Dr. B. R. Kirklin, Rochester, and
Discussors
Dr. J. P. Schneider of Minneapolis and
Dr. Robert O. Earl of Saint Paul
Symposium on Gastro-Intestinal Tract
Prof P. M. Hickey, Prof. of Roentgenology, University of Michigan, with
Dr. C. B. Wright of Minneapolis,
Dr. W. C. Alvarez of Rochester,
Dr. D. C. Balfour of Rochester and
Dr. J. A. Bargen of Rochester.
Symposium on Diseases of the Circulatory System
Dr. Ralph Major, Professor of Medicine, University of Kansas, and
Dr. W. S. Middleton, Associate Professor, Clinical Medicine, University of Wisconsin
Dr. B. J. Clawsen of Minneapolis
Dr. C. N. McCloud of St. Paul
Discussor
Dr. H. W. Cook of Minneapolis.
Symposium on Pulmonary Tuberculosis
Dr. A. A. Law of Minneapolis
Dr. H. E. Robertson of Rochester
Discussors
Dr. S. W. Harrington, Rochester
Dr. F. F. Callahan, Pokegama.

The Hotel Duluth will be the headquarters for the next annual meeting of the State Medical Association.

The following committees have been appointed by the St. Louis County Medical Society:

Dr. F. H. Magney, Chairman Local Arrangements Committee

Dr. Hilding C. Anderson, Convention Secretary.

Banquet and Entertainment:—Dr. C. A. Scherer, Dr. F. J. Elias, Dr. M. M. Fischer, Dr. Gordon MacRae, Dr. D. E. Seashore, Dr. Frank W. Spicer.

Clinical Material:—Dr. C. O. Kohlbry, Dr. J. R. Manley, Dr. L. L. Merriman, Dr. D. F. Pennie.

Convention Hall:—Dr. Robert S. Forbes, Dr. John E. Power, Dr. P. S. Rudie, Dr. T. O. Young.

Exhibits:—Dr. B. F. Davis, Dr. P. G. Boman, Dr. F. J. Lepak.

Publicity:—Dr. E. Z. Shapiro, Dr. E. L. Cheney, Dr. W. C. Martin.

Reception:—Dr. J. R. Kuth, Dr. L. A. Barney, Dr. E. L. Tuohy.

Reunions and Lunches:—Dr. W. G. Strobel, Dr. S. E. Urberg.

Hotel Accommodations:—Dr. T. G. Clement, Dr. L. R. Gowan, Dr. W. E. Hatch, Dr. Harry Klein, Dr. F. N. Knapp.

Civic Clubs:—Dr. C. L. Haney.

Arrangements are being made to have a reunion of the Class of 1902 of the Medical School of the University of Minnesota. There will also be a reunion of the Rush Medical Alumni.

Dr. W. G. Strobel, 2131 Woodland Avenue, Duluth, is chairman of the Committee on Reunions and Lunches, and would like to hear from any fraternities, etc., who desire to have meetings in connection with the annual meeting.

It is important that all notices to be printed in the program for the fifty-ninth annual meeting be received at the office of the secretary, 11 West Summit Avenue, Saint Paul, before May 12.

SUMMER CLINICS, CHICAGO MEDICAL SOCIETY, 1927

Announcements and schedules will soon be ready for the 1927 Summer Clinics of the Chicago Medical Society, supported by many of the largest hospitals in the city, among them being the Post Graduate Hospital, Chicago Memorial Hospital, University of Illinois College of Medicine, Cook County Hospital, Michael Reese Hospital, Mercy Hospital, Presbyterian Hospital, Jackson Park Hospital, St. Luke's Hospital, Ravenswood Hospital, Mount Sinai Hospital, Frances Willard Hospital, West Suburban Hospital, Evangelical Hos-

pital, North Chicago Hospital, Chicago Lying-in Hospital, St. Joseph Hospital, Alexian Brothers Hospital, Laboratory of Surgical Technique, Washington Park Hospital, Jackson Park Hospital, Chicago Municipal Tuberculosis Sanitarium, John B. Murphy Hospital. Several large laboratories have also agreed to co-operate in this great work.

In 1926 registrations were limited to physicians living in Illinois, but increased facilities make it possible to accommodate many more than last year. Registrations therefore will be open to physicians from other states and to as many as may be accommodated, in the order of their registrations. Registration fee will be $10 for each two weeks course, payable at time of registration, and a physician may register for only one course of two weeks.

Admission will be by card only, issued by the Chicago Medical Society, and no registration card will be issued until registration fee is paid.

The first two weeks course will begin on Monday, June 13, 1927, at 9 a. m., ending Friday, June 24.

The second two weeks course will begin on Monday, June 27 at 9 a. m., ending Friday, July 8.

This is an excellent opportunity for the medical men of the country to obtain real post-graduate work in some of the best hospitals in the world, and from some of the best clinicians found anywhere.

Schedules will be sent to the 10,000 physicians in Illinois, and announcements will be sent to the American Medical Association, and the several state medical journals.

It will probably be impossible to accommodate all those desiring this wonderful clinical course, so it behooves those in Chicago and Illinois to register early if they desire to take advantage of this year's summer clinics. Last year registrations closed one week after the first announcement.

INTER-STATE POST GRADUATE CLINIC ASSEMBLIES OF NORTH AMERICAN PHYSICIANS IN EUROPE, 1927

The foreign assemblies of the Inter-State Post Graduate Medical Association of this year offer wonderful clinical and sightseeing advantages for members of the profession and the officers of the Association have been assured by the most distinguished teachers and clinicians of the clinic cities to be visited that the members of the assemblies will receive a most hearty welcome and everything possible will be done to make the visit to the clinic centers of the Old World of great value.

The American Express Company is arranging excellent sightseeing programs in connection with and included in the price of the trip. There never has been and probably will not be for a number of years to come so many wonderful advantages, due to the fact that the members of the assemblies are going abroad on invitation from the leading universities and medical institutions, as well as the governments of the countries to be visited.

When one travels abroad alone or without the advantages of being invited as a guest of foreign countries, there are many unpleasant factors which are entirely obliterated when you go as one of a large family, which this party will be, and receive the kindest possible courtesy and hospitality of the distinguished hosts.

Any physician who desires to become a member of the group should register at once by sending in the reservation fee of $65.00 per person. Registration is limited to members in good standing in their State or Provincial societies. The deposit is requested in order to meet the requirements of the steamship companies and will be applied on the price of the trip. If you find that you cannot go, the money will be refunded, if demand is made as early as six weeks before sailing time. The money may be paid to Dr. W. B. Peck, managing-director, Freeport, Illinois, or the travel department of the American Express Company, 65 Broadway, New York, N. Y. In case of the latter, we suggest that the physician notify the managing-director when he sends the amount so that he can register him for the clinics.

The first section will sail from New York, May 21st, and the section section, June 18th. The countries to be visited by both sections are England, Scotland, Norway, Sweden, Denmark, Germany and France. Norway, Sweden and Denmark are included in this year's assemblies on account of these countries offering the very finest opportunities for medical study, and in taking this action we are complying with the requests of a large number of the members of the profession of North America.

The price of the assemblies, which includes everything, except tips on board ship, passport and other personal expenses such as laundry, theaters, souvenirs, etc., is $1,095.00.

The clinics and demonstrations connected with the assemblies will include all the different branches and specialties of medical science. It will be the endeavor of the Association to see that every branch of medicine receives the same consideration on the program Special sightseeing and entertainment arrangements will be made for the ladies while the physicians are busy in the clinics.

At present over 150 individuals have registered for the trip and as 200 is the limit that can be accommodated without crowding, physicians desiring to make the tour should register at once.

Following is a list of physicians in Minnesota and Montana who have already registered:

Dr. and Mrs. J. G. Ericson, Minneapolis; Dr. and Mrs. C. L. Larsen, St. Paul; Dr. E. T. Lindgen, Miss Peggy Lindgren, Duluth; Dr. J. William Parker, Rochester; Dr. H. J. Thornby, Moorhead; Dr. J. H. Garberson, Miles City, Montana.

WASHINGTON COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Washington County Medical Society was held April 5, 1927, with a six o'clock dinner at the Grand Cafe, Stillwater. The principal speaker of the evening was Dr. J. P. Schneider of Minneapolis and his subject was "Pernicious Anemia." The talk was illustrated with lantern slides.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ABBOTT LABORATORIES
Abbott's Mineral Oil Emulsion
Ephedrine Hydrochloride-Abbott

ELI LILLY & CO.
Ephedrine Sulphate-Lilly
Pulvules Ephedrine Sulphate-Lilly, 0.025 Gm.
Pulvules Ephedrine Sulphate-Lilly, 0.05 Gm.
Ampoules Ephedrine Sulphate-Lilly, 1 c.c. 0.05 Gm.
Solution Ephedrine Sulphate-Lilly, 3 per cent.

E. R. SQUIBB & SONS
Scarlet Fever Streptococcus Toxin-Squibb, 1 c.c.

TOWT-NOLAN LABORATORY
Lactobacillus Acidophilus Milk (Towt)

NON-PROPRIETARY ARTICLES
Ephedrine

TRUTH ABOUT MEDICINES

Ephedrine.—Ephedrine is an alkloid first obtained by Nagai in 1887 from ma huang (*Ephedra equisetina*). Chemically, ephedrine is a hydroxy-B-methylaminopropylbenzene. Structurally, it is closely related to epinephrine. Its salts are, in general, soluble in water and in alcohol, and the solutions are stable. Ephedrine produces effects similar to those produced by epinephrine. It also has been found to exert a direct depressant action on smooth and cardiac muscle. It produces a rather lasting rise of blood pressure, on intravenous or intramuscular injection, due mainly to vasoconstriction. Thus far, the most definite indications for the usefulness of ephedrine are for its local use on the turbinates and for ophthalmic examinations. Ephedrine has proved effective in some cases of asthma.

Ephedrine Hydrochloride.—The hydrochloride of an alkaloid obtained from *Ephedra equisetina.* For a discussion of its actions and uses, see preceding abstract "Ephedrine."

Ephedrine Hydrochloride-Abbott.—A brand of ephedrine hydrochloride-N.N.R. Abbott Laboratories, North Chicago, Ill.

Ephedrine Sulphate.—The sulphate of an alkaloid obtained from *Ephedra equisetina.* For a discussion of its actions and uses, see preceding abstract "Ephedrine."

Ephedrine Sulphate-Lilly.—A brand of ephedrine sulphate-N.N.R. Ephedrine Sulphate-Lilly is also marketed in the form of Pulvules Ephedrine Sulphate-Lilly, 0.025 Gm.; Pulvules Ephedrine Sulphate-Lilly, 0.05 Gm.; Ampoules Ephedrine Sulphate-Lilly, 1 c.c., 0.05 Gm.; and Solution Ephedrine Sulphate-Lilly, 3 per cent. Eli Lilly & Co., Indianapolis. (Jour. A. M. A. March 19, 1927, p. 925.)

Lactobacillus Acidophilus Milk (Towt).—A milk culture of *B. acidophilus* which contains not less than 250 millions of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations, see New and Non-official Remedies, 1926, p. 211, "Lactic Acid-Producing Organisms and Preparations." Towt-Nolan Laboratory, Oakland, Calif.

Scarlet Fever Streptococcus Toxin-Squibb (New and Non-official Remedies, 1926, p. 368).—This product is also marketed in packages of three 1 c.c. vials, each containing 30,000 skin test doses. E. R. Squibb & Sons, New York.

Glaseptic Ampoules Sodium Cacodylate-P. D. & Co., 0.05 Gm. to 0.45 Gm. (1 c.c.); 2 c.c.; Glaseptic Ampoules Sodium Cacodylate-P. D. & Co. (for Intravenous Use), 0.2 Gm., 5 c.c.; Glaseptic Ampoules Sodium Cacodylate-P. D. & Co. (for Intravenous Use), 0.45 Gm., 5 c.c.: Glaseptic Ampoules Sodium Cacodylate-P. D. & Co. (for Intravenous Use), 1 Gm., 10 c.c. For a discussion of the actions and uses of sodium cacodylate, see Useful Drugs, Seventh Edition, p. 133. Parke, Davis & Co., Detroit. (Jour. A M. A. March 26, 1927, p. 1003.)

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of February 9, 1927.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, February 9, 1927, at 8 o'clock. Dinner was served at 7 o'clock.

The meeting was called to order by the Vice-President, Dr. J. E. Hynes. There were 30 members and 3 visitors present.

The minutes of the January meeting were read and approved.

DR. R. E. FARR (Minneapolis) reported a case of Ulcer of the Stomach, as follows:

The custom of reporting our successes before medical societies has become so well established that I feel it worth while to confess one of my errors before this body.

I report the following case for the purpose of illustrating a missed diagnosis, due to the misinterpretation of films by a radiographic expert and myself, and because of the further fact that, through the force of circumstances, I allowed myself to be hurried into the performance of an operation without employing measures which might otherwise have resulted in a definite pre-operative diagnosis with the satisfaction that attaches thereto.

Mr. K., age 59, entered St. Mary's Hospital on January 13, 1927, being referred by a group of physicians who had endeavored to make a diagnosis by taking the history, making a physical examination and inducing the patient to submit to a radiologic examination at the hands of a recognized expert.

The case was referred to me under the following conditions. While I was operating, one of the physicians who had been investigating the patient entered the operating room and stated that he would like to have me operate upon a patient on the following morn-

ing. I demurred, stating that I desired more time in which to investigate the case. He stated that the patient had an epigastric tumor of some months' duration, was practically without gastric or duodenal symptoms and presented, in writing, the radiographic report, which is as follows:

"A series of plates and fluoroscopic examination made immediately after a barium meal show the stomach normal in size, shape and position. There is no evidence of a lesion involving the stomach and at the pyloric end. In addition there is considerable dilatation of the entire duodenum.

"Examination at six hours shows the head of the column in the ascending colon, the tail in the lower ileum.

"Examination at 24 hours shows the head of the column in the rectum, the tail in the cecum. Cecum is freely movable. The appendix is not visualized and there is no localized tenderness on pressure.

"Conclusions: There is no evidence of cancer or ulcer of the stomach and no evidence of duodenal ulcer. There is evidence of an extra-gastric mass in the right upper quadrant of the abdomen which is causing a pressure deformity on the stomach and some adhesions and stasis in the duodenum. This, I believe, might be either gallbladder involvement or pancreatic tumor.

"Signed.....M.D."

The referring physician stated that he had seen the patient three years before in a rather severe attack of epigastric pain, that the patient was laid up for a short time and that he considered it a "sprain" of the right rectus muscle. He stated that the patient's history was practically negative from the standpoint of gastric symptoms. With this information, the *x*-ray report, and a fixed, plainly palpable tumor midway between the xiphoid and the umbilicus, a diagnosis of pancreatic cyst seemed probable.

This conversation took place on Thursday and as the physicians could not be present on Saturday and stated that the patient would not consent to wait until Monday, I reluctantly agreed to operate Friday.

The patient entered St. Mary's Hospital on Thursday evening, where he was seen by my associate, Dr. Caron, who telephoned me the history and findings which were as follows:

History: Patient, a male, 59 years of age, states that except for rheumatism forty years ago he has never been previously ill. His present complaint is gastric fullness. The patient states that for the past year he has noticed a sense of fullness or tightness over the epigastrium occurring after meals. These symptoms gradually disappear and seem to be aggravated by intake of more food. The pain is not of a burning nature, is not referred; soda has not been tried; nausea or vomiting has never occurred. There has been no loss of weight and no jaundice at any time. The course has been progressive; that is, the sense of tightness over the epigastrium following meals seems to be slightly worse of late when large amounts are taken. Although the above mentioned symptoms are the patient's present complaint, his reason for consulting a doctor was a sudden, sharp, cramp-like pain in the epigastrium which occurred a week ago while trying to lift a heavy block. This pain was sharp and cramp-like, localized over the epigastrium, lasted but three or four minutes. However, the sense of stiffness and soreness over the abdomen did not subside. The patient then consulted a doctor. The doctor took the history, examined the patient, and advised gastrointestinal *x*-rays.

The physical examination reveals a fairly well-nourished male, not acutely ill. Temperature 98.6, pulse 70, respiration 18, and blood pressure 125/80.

The essential findings consist of a tumor in the epigastrium. Palpation and percussion show a tumor mass which is not movable except on respiration. Tenderness is present but not exquisite. There is no rigidity of the abdomen. Other organs are not palpable. Regional examination is essentially negative.

I did not see the patient on Thursday evening and arrived at the hospital late on Friday morning to find him already upon the operating table. I then made a careful physical examination, finding a rather fixed tumor mass in the upper abdomen at the midline. It was not tender, and, as the radiographic report stated that it was extra-gastric and extra-duodenal, I made a tentative diagnosis of a pancreatic cyst. (A cursory examination of 12 radiographic films did not aid me materially in arriving at a definite conclusion.)

The operation under local anesthesia was proceeded with at once and a transrectus incision with a vertical incision upward at the midline was made.

Pathology: A chronic duodenal ulcer attached to the parietal peritoneum was encountered. An indurated tumor the size of a lemon presented, with extensive peri-duodenal adhesions. The lesser curvature and duodenum were freely mobilized after the method of Finney, and a Bilroth I performed after excision of the tumor. (Frozen sections showed that the tumor was benign.) The duodenum was divided diagonally and except for a rather serious post-operative heart block (his pulse during the operation remained below 70), the patient has made a rather good recovery. He is now daily taking 1,800 calories and 2,500 c.c. of fluid and is being mildly alkalinized, as his acidity continues low. The stomach is lavaged once a day with a solution of sodium bicarbonate.

Comment: This case is reported for the purpose of admitting preoperative mismanagement. I feel that I should have delayed the operation until I had had sufficient time in which to:

(a) check personally the patient's history;

(b) investigate more thoroughly the condition of the myocardium;

(c) employ pneumo-peritoneum for the purpose of ascertaining whether or not the tumor was retroperitoneal;

(d) more carefully studying the films (the constant presence of a shadow over 1 cm. square in 10 of the 12 films should have been suggestive of ulcer). Radiograms shown.

(e) further, a radiogram taken in the transverse diameter with the patient lying upon his back would have

demonstrated the duodenum firmly attached to the anterior abdominal wall;

(f) as all cases of gastric surgery should be preceded by at least 2 days of the administration of sterilized food and meticulous attention to oral asepsis, this feature would have been attended to.

(g) In such cases it is not unusual to neglect to sterilize the instruments employed for gastric and duodenal surgery, thus resulting in preventable delay when the pre-operative diagnosis is incorrect.

I feel that, notwithstanding the fortunate outcome, this report may be the means of calling attention to some of our shortcomings which result from the force of circumstances and which may be reduced to a minimum by the exhibition of a somewhat more authoritative attitude on the part of surgeons when similar exigencies arise.

DR. CARL B. DRAKE (St. Paul) reported a case of Amebic Dysentery treated with Stovarsol:

Mrs. D., age 26, came to the office June 3, 1926, complaining of dysentery of three months' duration. At first she had watery stools with considerable mucus and some blood as often as 25 a day. A year previous she had had a diarrhea for a week. Her appendix had been removed in 1924. She had lost 24 pounds since her marriage four years previous. Tonsillectomy had been performed 10 years before. Recent *x*-ray examination had failed to show any abnormality of the gastro-intestinal tract and the institution of a very bland diet of boiled milk, burnt flour, soup and gruels had failed to relieve the condition. Of late the bowel movements had been most frequent mornings and evenings, very little trouble having been experienced at night. There was fever at first and a few canker sores in the mouth lately. She had not been out of the city during the past year.

Examination showed a poorly nourished young woman weighing 100 pounds; her normal weight being 128 pounds. There were a few ulcerated areas in the mucous membranes of the mouth. Aside from a slight tenderness in the region of the appendectomy scar nothing abnormal was found. The stomach acidity was free HCl 10, total acidity 18. Proctoscopic examination showed an inflamed mucous membrane, some mucus, but no ulceration. The blood hemoglobin was 43 per cent, r.b.c. 5,000,000, w.b.c. 10,000. Temperature, pulse and blood pressure were normal.

Motile entamebæ histolytica were found on first examination of the stool by Dr. Warwick.

The patient was put to bed in the hospital and treated energetically for three weeks with emetin hydrochloride gr. ½ twice a day for a week at a time, emetin bismuth iodide gr. 1 by mouth three times a day after meals, quinin retention enemas, bismuth subcarbonate hourly for a time, but with only slight improvement.

For the next two and a half months the patient received courses of emetin intramasculary, bismuth, fluid extract of chapparo amargosa, emetin bismuth iodide orally off and on, but became progressively weaker and more emaciated.

On September 25 all medication was stopped, a more liberal diet was given, and stovarsol tablets (0.25 gm. each) orally after meals were administered for five days. Some improvement was noted. After taking no medication for the succeeding five days, the tablets were resumed and in two days twenty-four hours passed without a bowel movement for the first time in seven months.

The patient was in the office today and looked well. She had gained 13 pounds in weight. Her hemoglobin had increased to 75 per cent. She has had a slight diarrhea for a day at a time, having from one to six stools in 24 hours about every two weeks. This has been promptly relieved by commencing the stovarsol.

Examination of the returned soldiers after the World War showed some 12 per cent infected with the entameba histolytica. Various reports indicate that about 10 per cent of the civilian population of the northwest portion of this country is similarly infected. Why all so infected do not have symptoms of dysentery is not clear. Craig believes the infection produces symptoms in 50 per cent or more of the carriers. He mentions constipation relieved periodically by diarrhea for a day or two, loss of appetite, loss of weight, slight anemia. Buie thinks the infection is secondary ofttimes in cases of chronic ulcerative colitis which he believes is caused by Bargan's lanceolated diplococcus. The relation of the infection to certain cases of iritis is probably not proven as yet.

When we consider the extensiveness of the intestinal infection even in carriers it is remarkable that all those infected do not present symptoms.

My attention was called to stovarsol by an article by John and Jamison which appeared in the Journal of the A. M. A., June 20, 1925. All of 46 cases, both acute and chronic, were relieved in 3 to 6 days of all dysentery symptoms with 0.5 to 1 gm. of stovarsol daily. Dr. P. W. Brown of Rochester informed me that 85 per cent of their cases have responded to stovarsol alone.

The preparation is the acetyl derivative of arsenic acid and contains about 27 per cent arsenic. It comes in tablets of 0.25 gm. and may be given three times a day after meals for five days with ten-day periods of rest.

DISCUSSION

DR. HEAD (Minneapolis): Are there still amebæ in the stools?

DR. DRAKE: That has not been checked up.

DR. GARDNER (Minneapolis): Dr. Drake referred to the frequency of infection with pathogenic entameba. I know that statements have been made by workers of the Pacific coast that amebæ are extremely common in normal people and can be found in the stools. This was only partially confirmed by work at the Mayo Clinic in the cases which they studied. In our experience, we have examined several thousand stools and have found parasitic infections very uncommon. In an informal discussion at Dallas last summer, some southern parasitologists stated that they did not find the infection in the south as frequently as those on the

Pacific coast would indicate. I wonder whether large phagocytic cells frequently found in stools, especially when mucus is present or other signs of colonic irritation exist, are not being mistaken for amebæ. I cannot help but feel that amebic infection is rare in this locality, although we should approach the subject with an open mind.

DR. GILFILLAN (St. Paul): I have had occasion to look up the action of arsenic in dysentery and apparently it does good in the non-entamebic form of colitis also. First neoarsphenamine was used intravenously. Then a Frenchman used neoarsphenamine in solution by mouth, with good results, and then had the neoarsphenamine put up in gluten-coated pills, because it oxidizes rapidly and loses its strength. Then he used stovarsol, treparsol, and all of those, and he thinks arsphenamine is the best of all. He points out that emetin and ipecac help in the acute stages of the disease but they don't kill the organisms; then there comes a stage when they no longer do any good. Then arsenic does good. He has cases that he has tried these remedies on; their amebæ disappear but if the remedy is stopped for a few days they come back again in a little while and they cannot be eliminated in a few days. He gives arsphenamine in compressed tablet form, 0.2 gm., and gives ½ to 1 gm. by mouth for a number of days and continues with small doses. He has tried it out on carriers and it causes amebæ to disappear from the bowel. He tells of one experiment of a man who took ameba stools in capsules and at the same time took stovarsol and did not develop a dysentery. He got only one man to do this so his series is not a long one. Apparently they have found something which does good in dysentery and in other forms of colitis too. I have today started a case on arsphenamine in severe dysentery.

DR. MCCLOUD (St. Paul): I know very little about entamebæ, but have recently had occasion to review the literature on the subject. We recently had an aplicant for insurance from Indiana giving a history of having dysentery in 1924, amebæ in the stools, and he had lost 85 pounds. After taking three bottles of stovarsol, his symptoms all subsided, and he was pronounced cured.

The question arises, is he now insurable at standard rates? I was granted access to a book on tropical diseases published by the United Fruit Company, who maintain nine hospitals in South and Central America and who, of course, have had a wide experience in the treatment of this disease. They have tried stovarsol but have come to the conclusion that it is no more effective than the bismuth and emetin treatment as used by Dr. Deeks, who is Medical Director of the United Fruit Company.

I have read Drs. John and Jamison's articles and do not gather that they regard this as a specific remedy. Tice, commenting thereon, states that they have found in stovarsol a harmless remedy for amebic dysentery that compares quite favorably with anything previously employed.

I wonder if any one can tell me of the complications to be expected in these cases. I am thinking especially of liver complications. We meet this question very rarely in insurance but it would be interesting to know what complications we might expect.

DR. HEAD: It is important to remember, in connection with these cases of amebic dysentery, that many times, for some reason or other, they show very pronounced improvement no matter what treatment they are put upon. I remember some years ago I had an opportunity of watching over a number of years a veteran from the Philippines in the Spanish-American war, in whom exacerbations and remissions in the disease were very pronounced. At various times we thought we were accomplishing a good deal with the special medication that was being used, but finally came to the conclusion that what we did, did not have very much to do with the remissions. The patient would have a period of relief and then the exacerbations would come on again at certain intervals.

It is well to remember that, pathologically, these amebæ are imbedded very deep in the walls of the colon. It never seemed reasonable to me to be able to kill them out in the tissues without actually killing the cells of the bowel itself. Unless one has a rather large number of cases to observe, it is best to remember that we may have remissions in the disease and therefore our therapeutic conclusions may be erroneous.

DR. DRAKE (in closing): After the War I had a chance to see several cases of dysentery. One developed liver abscess, which Dr. Colvin operated, with recovery. I had occasion to look the subject up at that time. I had an acute case a year ago at the Ancker Hospital, which cleared up beautifully under emetin bismuth iodide by mouth and emetin hypodermically.

In this case reported tonight I tried emetin, the Mexican drug called chapparo amargosa, and bismuth by the pound. After I had treated her for about 4 months she was so emaciated that I thought she was going to die. Her improvement under stovarsol was so marked that I thought the case worth reporting. I realize that she probably has amebæ still present but stovarsol has proved so much better than any other medication that I feel it was quite worth while.

DR. W. A. JONES (Minneapolis) read a paper entitled "A Review of the Modern Studies of Mental Diseases."

ABSTRACT

In preparing this review the writer found that the subject was almost inexhaustible, and he could only comment upon a comparatively few books and articles.

It is quite evident from the investigation of these subjects that we not infrequently overlook the fundamental study of mental diseases, namely the patient himself. Usually a history of the family and the individual reveals within a reasonable time the order in which this individual, in the future, may conduct his life.

Dr. Bassoe refers to the weaknesses of the modern investigator, of which he says there is a needless use

of cumbersome temerity and equally cumbersome and involved style. Consequently they miss much of the attention that they should receive; and the general practitioner and the public at large should open their eyes to the importance of the understanding of morbid mental factors, not only in disease, but in all lines of human activity. Most of the writers on mental diseases refer to the significant trend in modern medicine, and insist upon the fact that the patient is a more interesting subject for study rather than the disease itself, that we should give more weight to the individual, psychologically, physiologically, and biochemically; that is, these various subjects should be investigated in their relationship of one to another.

Dr. George W. Henry, Senior Physician of Bloomingdale Hospital, White Plains, has written a very clever book on the "Essentials of Psychiatry," wherein he refers to his own experience as a student at lectures, where he listened, and became convinced that a more simple and condensed method was necessary to present the subject of psychiatry than had heretofore been employed. He shows his continued interest in the matter by making his subject and book an easy one to read.

Even Mr. James Henry Robinson, in "The Ordeal of Civilization," recommends the methods of the modern physician, who, in dealing with physical and mental dislocation, always asked, "How did he get that way?"

The present medical student is compelled to spend years in acquiring a knowledge of the structure and functions of the human body, but is left with little or no instruction of the activities of the mind, which the body subserves. Then, too, there seems to be a tendency to investigate the probabilities of endorrinism disturbances as an important factor in sexual behavior, manifestation and disturbances, hence it is quite necessary in investigating these people to get at their peculiar sex life from its inception.

Many of these writers criticise the long and intricate classifications of mental disorders, which might easily be reduced to four types, which practically include all forms of mental diseases.

The first group is composed of these psychoses in which disorders are largely psychological in nature; and these include the affective, paranoiac and paranoid, dementia præcox and psychoneurotic disorders. A second group consists of toxic psychoses, disorders due essentially to abnormal physiological conditions and include the toxic infections and exhaustive psychoses. The third group is called the organic psychoses due to actual anatomical changes in the nervous system and particularly in the brain. This group includes infections to the brain, brain tumors, general infections or conditions such as cerebral arteriosclerosis and senility. The fourth group is composed of the constitutional inferiority cases.

Other writers call attention to the fact that the general practitioner is not infrequently responsible for the continuance of mental disorders by not recognizing them early enough.

Dr. E. L. Tuohy (Duluth) gave a lantern slide talk, with slides of *x*-ray plates and case reports, entitled "Some Features in the Diagnosis of Chest Conditions."

ABSTRACT

1. Discussion relative to foreign material entering the lungs via the bronchi. Reference to the usual foreign bodies. The influence of age, decrepitude, throat malignancy, dusting powder inhalation and recurrent laryngeal interference in goiter surgery, aortic aneurysm and general mediastinal invasion.

2. The present status of lipodol injections; also of bronchoscopy. Demonstration of instruments used.

3. Is there such a thing as absolutely diagnostic films of pulmonary tuberculosis?

4. A showing of definite enough tuberculosis films.

5. M. K. No. 50338. Male, age 5 years.

Comment: Here was the story and a roentgen film that certainly did not suggest in any way pulmonary tuberculosis. However, the tuberculous lobar pneumonia is easily enough explained when we see the autopsy findings and the unusual results of hilus gland caseation. There are, no doubt, so definite and consistent classical shadows shown on many films as to make any other diagnosis than tuberculosis quite unthinkable. However, we should conjure with the opposite view, and assume that the roentgen film "can always be diagnostic"; in other words, that it is anything more than an amplification of the infection.

6. Pneumothorax—what a segment of chest looks like without any lung in it.

H. J. No. 43926. Male, age 32, furrier.

Comment: Thus, we had here no history of previous illness, no unusual strain, no accidents. We have records now of 8 such patients, in all of whom complete recovery took place. Indeed, one individual had 3 such attacks—unilateral—all with recovery. There seems to be an attitude in the minds of many good clinicians, which has not outgrown the stage corresponding to the musical development of General Grant: he stated, on occasion, that so far as he was concerned there were only two tunes—the one was "Yankee Doodle" and the other was not. So with tuberculosis—in too many minds any chronic lung condition must be tuberculosis.

7. Empyema and pleuritis; the masking influence of the latter.

M. B., No. 42249. Male, age 38, laborer.

Comment: This is introduced purposely to show that a diffuse shadow, looking like "pleuritis," "a thickened pleura," or a chest supposedly full of fluid, may mask many things. Not the least in this masking is a basic malignancy, as shown here, an obvious blocking of bronchial drainage, and most of the signs that came thereafter were only a complication of the real pathology concerned, *i.e.,* carcinoma of right bronchus, metastases into pancreas.

8. One of the confusing and not uncommon pictures seen in mineralization of the lung.

Comment: A description of this case is not introduced because it was of no particular moment. The man had been a worker in the mines both of England

(tin) and in our own country, in quarries, and elsewhere. Suffice it to say that the roentgen films, while showing a little tendency to fibrosis, gave the extensive mottling that would strongly suggest miliary tuberculosis.

9. Our accumulating knowledge of the roentgen picture of bronchopneumonia.

Miss A. O., No. 91127. Female, age 20, student.

Was this a slowly resolving pneumonia? What is the course, clinical and pathological, of "chronic interstitial pneumonia or Corrigan's cirrhosis of the lung"?

Comment: This record is introduced with the showing of three slides of roentgen films, to show a graphic return to normal after the protracted period of three months, with a series of lung shadows extraordinarily indicative, in their placing and character, of tuberculosis. As our knowledge of the roentgen evidence of broncho-pneumonia enlarges, it teaches us to be very conservative in the interpretation of certain shadows.

10. It is essential and fairly easy to dispose of the gross subjective roentgen lung findings in metastatic malignancy.

Comment: A series of four lantern slides were shown, giving the rather large, sharply circumscribed shadows in the roentgen films of lungs of patients with malignancy in the pelvis and testicle. Such need only be seen to be easily disposed of.

11. But a comparison of miliary metastases (pulmonary) and miliary tuberculosis of lungs renders a differentiation almost impossible.

P. C., No. 51166. Male, age 50, Italian, laborer. (Autopsy showed the primary carcinoma to be in the stomach.)

Comment: The lantern slide of one other instance of miliary carcinosis of the lungs, from a primary carcinoma from the pylorus, was shown together with two accepted and proven instances of films from the lungs of cases of miliary tuberculosis. It was pointed out that with two lanterns in position and projecting these contrasting films—the one of miliary tuberculosis and the other of miliary carcinoma—upon the same screen, careful observers were not able to distinguish which was the one and which was the other.

12. Primary carcinoma of the lung* is not uncommon. (Hodgkin's and allied lymph gland malignancies are quite frequently encountered.)

(a) Primary carcinoma of the lung is not uncommon.

(b) Signs and symptoms are not definite and suggest tuberculosis.

(c) Physical findings are usually unilateral—thus differing from well-established tuberculosis.

(d) Cough is harsh and persistent, often non-productive; and hemoptysis not rare.

(e) Constitutional depression is continuous and persistent.

(f) Roentgen-ray does not yield early evidence; the bronchoscope may.

(g) Postmortems done routinely, so frequently refused in chronic indefinite disease, frequently demonstrate its presence.

Mrs. P. F. S., No. 25377. Female, age 48, housewife.

Comment: In a series of slides of lung tumors this is introduced first, because, while it seems to evidence definite pressure signs indicative of malignancy, the patient has already gone a considerable length of time (nearly 3 years) and appears to be in excellent health. Is it a benign tumor or semi-benign tumor, arising from the pleura, or even originating from a rib? The literature is somewhat obscure, and those who write on the subject of lung tumor are not inclined to believe that there are many benign tumors within the thorax.

G. B., No. 86440. Male, age 44, laborer.

Comment: This case is introduced to draw notable attention to the fact that even where a proven diagnosis of tuberculosis can be made it does not always exclude malignancy. Unless heroic efforts had been made to get an autopsy on this patient, the original contention that he had malignancy would have been supposedly disproved; and again a chronic disorder, accompanied by cough, would have been classified as a primary tuberculosis. Indeed, the remark of Moses, quoted above under "G," deserves our attention.

Mrs. A. A., No. 31112. Female, age 26, housewife.

Comment: This is another instance of malignancy (though unproven by autopsy) which cannot be very well questioned, when one considers the degree of pain the patient endured and the rapidity of the process. Nevertheless, note that in the beginning the shadow suggested to her doctor a purulence or fluid accumulation rather than a tumor

13. Let us not forget the lung hilus; but even more, the mediastinum, with its indefinite boundaries but enormous capacity for crippling the heart when diffusely invaded.

A. S., No. 35473. Male, age 49, Finnish, shipbuilder.

Comment: This history is introduced because it bears out the contention often read in the literature commenting upon the tendency for carcinoma of the bronchus to give metastases into the vertebral column. In this degree it shares the same propensity probably equally with carcinoma of the thyroid. In either case, the steps involved may be fairly silent: in the one, a tumor growth has appeared and developed within the chest to a surprising degree before it is found; in the latter, a long carried and apparently innocent looking goiter suddenly takes on changes involving extreme hardness, and the next step may be the dreaded metastases of the spine.

14. Chronic interstitial pneumonia (Corrigan's cirrhosis). Not a specific lung disease. A fibrous C. T. shrinkage, rarely bilateral. Best known by its antecedents and associated pathology. These include pneumonia, pleurisy, pneumoconiosis, bronchiectasis, syphilis, acute aneurysm and malignant tumors of lung and bronchi. The signs are masked, and generally progressive. Lung shrinkage ensues, dyspnea, heart displacement, clubbing of fingers, heart dilatation and cyanosis.

Allbutt and Rolleston's series gives excellent review, even though now relatively old. In a series of 21,317

*Moses, Henry M., Kings County Hosp., Brooklyn, N. Y., Amer. Jour. Med. Sci., 1925, p. 102.

autopsies, there were found from the years 1857 to 1906, 46 cases of "pulmonary fibrosis." They were divided into 6 groups and, interestingly, a large group of 11 was due to bronchus occlusion.

Note: The pathologists are wont to assert that so-called "unresolved pneumonias" are prone to show at autopsy "chronic pneumonitis" or Corrigan's cirrhosis. If this is a correct observation, clinicians must become more familiar with chronic fibrosing non-tuberculous lung lesions.

15. A brief reference to a heart case.

W. J. H., No. 52287. Male, aged 37, advertising manager.

Pathological specimen shown (syphilitic aortitis). Autopsy showed almost total closure of coronary ostia; also, curiously, a near closure of the opening of the innominate artery (in exactly the same manner) as it left the aorta.

Note: With this singularly healthy appearing subject, might the evidence be fairly adduced that the fact that he came originally from Minneapolis indicate the etiology involved? Or should one consider of more importance the fact that he lived in St. Paul?

DISCUSSION

Dr. S. M. White (Minneapolis): I only want to take occasion to repeat by way of emphasis what Dr. Tuohy says about the diagnosis of tuberculosis and the realization to which we are coming of the frequency with which chronic disorders of the lung, even with cavitation, are found to be non-tuberculous. Our tendency has been to suspect that everything with hemorrhage was tuberculous in origin and we must still bear that probability in mind; but with cavitation, if the sputum is negative on repeated examination, we have often proved that we are dealing with a non-tuberculous condition. Pathologic changes seen through the bronchoscope may reveal that we are dealing with bronchiectasis or some other non-tuberculous condition.

One other point interested me in that particular relation and that is the difficulty that occurs in diagnosis of carcinoma of the bronchus in differentiating from tuberculosis. It brings out what Dr. Tuohy said concerning *x*-ray examination. We are too prone to do two things, *i.e.*, (1) accept the roentgenologist's diagnosis; (2) not follow with excessive enough care all other methods of diagnosis. Carcinoma of the bronchus has in my experience been repeatedly diagnosed by roentgenologists as tuberculosis. I think the reason for that confusion lies in the infrequent occurrence of carcinoma involving the upper portions of the lungs where tuberculous shadows are more common. In bronchial carcinoma we may have extension of shadows to the periphery of the lung, regional lymphatic metastases of the lungs, carcinomatous growth, or possibly both; so unless very great care is used that confusion may lead to serious error.

Dr. Farr (Minneapolis): I want to thank Dr. Tuohy for his splendid presentation of this subject and to mention the work of S. H. Schlueter and I. F. Meidlein of Western Reserve University in regard to the resistance of the lining of the lungs to foreign and even bacterial invasion. Their experiments were carried out upon dogs; there may be a difference in the human subject. It would naturally be a satisfaction to me, should experimental work show that the insufflation of infected material is a common cause of post-operative lung complications. If so, such complications could best be prevented by the use of local anesthesia. Notwithstanding the fact that the lung does tolerate foreign materials to a certain extent, there are many recorded cases in which material that has previously been swallowed is found. From the practical standpoint, I believe that we must agree with the position taken in my book, that even though lung infections are often embolic in origin, such infections would be more easily combated if the lungs were not waterlogged with infected materials from the mouth, nares and stomach.

In malignant conditions of the throat, the onset would be insidious and the lung would soon learn to tolerate the leakage and yet it is significant that lung complications not infrequently follow these conditions.

In goiter cases it is different. Embolism is a rare sequel here. Injury to the nerves can be almost entirely eliminated by asking the patient to speak before incising the tissues.

The *x*-ray is of undoubted value, but the importance of interpretation cannot be too greatly stressed.

In closing, I want to ask Dr. Tuohy if the gentleman with lues whose history was suspicious only because of the fact that he was reared in Minneapolis and was in business in St. Paul, had ever previously been in Düluth?

Dr. Head: I would like to express my appreciation of these cases and mention one or two things that struck me as Dr. Tuohy was presenting them. One thing that ought to be well impressed on all our minds in relation to the mistakes in interpretation of chest conditions, is this, namely, it is a very good idea not to examine the stereoscopic plates or even do an *x*-ray, until you have done a very thorough physical examination of the chest. In other words, don't start your physical examination with a preconceived notion beforehand of what you expect to find. I believe in having these studies done independently. I think it is a good thing to fluoroscope the chest and study the plates, but I think it is a mistake for the clinician to have the roentgenologist's diagnosis before he has made his own independent observations. Like the French scientist's caution to research workers, I think the advice is good for physical diagnosis work, namely, in physical diagnosis one should be very careful not to find exactly what he is looking for.

Another thing I wish to emphasize, namely, that none of the methods which are at hand should be looked upon lightly. We ought to avail ourselves of all the information we can secure and try and reserve our judgment as to what is there, until we have all our findings on hand. Some of us are liable to jump to conclusions, to over-emphasize one special finding that experience has taught us is of considerable value, and

are likely to arrive too quickly at a conclusion which may warp our judgment. If we can hold steady and wait until we have all the evidence at hand we will save ourselves many a diagnostic error.

I have often thought that when we have presented such a clear-cut diagnosis from the roentgenologist, without regard to the history of the case, and studied from only one point of view, that it would be a fine experience if the roentgenologist could be found more often at the autopsy table. I know that especially impressed me in the Army Hospital at Camp Wheeler, Macon, Ga. We would have sometimes eight or ten autopsies daily, and I don't remember ever seeing a roentgenologist at one of them to observe whether the *x*-ray interpretations made by him were correct. I wonder whether these men are checking up their findings pathologically. Therefore, until they have made a more careful study of their diagnosis from the pathological studies, I am not so sure that we should pay so much attention to their diagnosis.

DR. TUOHY: I wish to thank these men for their comments. It is difficult to cover such a big field in a short space of time. Apropos of what Dr. Farr said as to the experimental work of others, it seemed to me that the position of the patient in this work made a great deal of difference. Under some circumstances a great deal gets down into the lung.

CARL B. DRAKE, M.D.
Secretary.

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:
DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

TRIOS CAS D'IMPLANTATION TUBO-UTERINE (THREE CASES OF TRANSPLANTATION OF THE FALLOPIAN TUBE): G. Cotte and Pierre Bertrand (Syon Chir. 1926, 23, 660-666). In the surgical treatment of sterility of tubal origin salpingostomy is the logical operation when there is obstruction at the fimbriated end but futile when the site of the obstruction is in the first portion of the tube or at the cornu of the uterus. This occurs in about 38 per cent of cases. In these, salping-uterine anastomosis has been employed and pregnancy has been reported postoperatively in several instances.

The authors have performed three of these operations, all too recent to have tested the ability of the patients to become pregnant. They have demonstrated the permeability of the tubes postoperatively, however, by lipiodol injections and roentgenograms.

The cornu of the uterus was hollowed out and with a needle passed through the fundus of the uterus and through the hollowed-out cornu, they passed a strand of catgut with which to anchor the tube in the uterine cavity. Once in place the tube is fixed by two sutures, not perforating the tubes.

Rupture of the uterus might occur with pregnancy following this operation when an incision is made in the anterior uterine wall as was done by Strassmann and others, but is not likely to occur when the operation is performed according to the above technic. The other objection to the operation is the possibility of the development of stricture of the tube but it was demonstrated that this did not occur in one case at least, by lipiodol injections six months after operation. Furthermore, the occurrence of pregnancy after the operation has demonstrated its practicability.

HAROLD E. SIMON, M.D.

PHLEGMONOUS GASTRITIS: Karl A. Meyer, William A. Brams and Chester Guy (Surg., Gynec. & Obst., 1927, 44, 301-307). Two cases are reported. This condition is neither extremely rare nor necessarily fatal. Riegel found about fifty reported cases up to 1905 and Brumm reported that 219 cases were described in the literature up to 1925.

The cause of this interesting condition is usually the streptococcus, occasionally a hemolytic staphylococcus or pneumococcus. The mode of invasion is difficult to determine. In some instances it may be a localized point in a focal infection but there are numerous cases in which some local condition such as carcinoma or ulcer could explain its origin.

It may develop either as a localized abscess, usually in the pyloric region, or as a diffuse sero-prulent inflammation of the entire stomach wall, the latter being the more common form. In both varieties it is the submucosa that bears the brunt of the inflammation and some authors believe this layer to be the starting point of the process. This layer increases greatly in thickness, becomes pale and edematous and infiltrated with purulent exudate.

The clinical syndrome is usually severe and consists of the signs and symptoms usually associated with an acute surgical abdomen together with definite septic phenomena.

The onset is usually sudden, with severe abdominal pain, tenderness, vomiting and fever. Vomiting of purulent material is very significant when present but is not very common. The pain closely resembles that in perforating ulcer but is relieved when the patient

sits up and is associated with a fever. The symptoms are constant throughout the course.

The mortality in non-surgical cases has been 92 per cent, but is less when surgery has been employed. The type of operation varies in the individual cases and may consist in resection when the process is sufficiently localized or merely multiple punctures of the gastric wall in the extensive diffuse forms.

HAROLD E. SIMON, M.D.

THE POSITION OF THE ABDOMINAL VISCERA IN HEALTHY, YOUNG BRITISH AND AMERICAN ADULTS: Robert Orton Moody (Journal of Anatomy, 1927, 41, 223-231). Ptosis of the various abdominal organs has been much discussed in medical literature of the last 25 years but there is still much difference of opinion in regard to the significance of these conditions and in regard to what should be considered normal.

To determine the range of the normal position of the abdominal viscera and to establish a basis for a definite and accurate concept of what may rightly be called ptosis, radiographs have been taken of 1,150 men and women, mostly students, not one of whom has a history of chronic gastric or intestinal trouble. The radiographs were taken with the subjects erect.

The interiliac line is used as a level from which to measure the position of the viscera.

In 87 per cent of the British men and in 75 per cent of the American men the lowest part of the greater curvature of the stomach falls below this line, while in 96 per cent of the British women and 88 per cent of American women, the corresponding part of the stomach falls below this line. The stomachs of British men and women therefore are lower than the stomachs of American men and women.

The lowest part of the lesser curvature of the stomach is likewise lower in both sexes in the British; radiographs taken of 44 British boys between the ages of 7 and 14 years indicate that the stomachs of the boys are higher than those of the men.

Comparing the position of the stomach before and after the barium meal it was found that the distance that the lowest part of the greater curvature of the stomach is moved down by the meal varies from a small fraction of an inch to 4 inches, most frequently 1 to 2 inches.

The marked difference in the position of the stomach in the British and the American is probably because the British tend to have narrower, longer thoracic cavities with narrower, shorter abdominal cavities.

With the subject upright, the lower end of the cecum is not often found in the iliac fossa, but usually in the true pelvis (45.6%). The colon has many forms and positions. The lowest part of the transverse colon is most often found between 3 and 4 inches below the interiliac line in males and about one inch lower in females.

It has been suggested by clinicians that it is the people with low stomachs who more often have some form of gastro-intestinal trouble in middle life and old age. Since low stomachs are found in so large a number of young people it would not be strange if, among the elderly people who have gastro-intestinal trouble, many have low stomachs. One hundred patients over forty, who had symptoms of gastro-intestinal trouble were studied and the incidence of low stomachs was less than in the healthy young adults.

The author believes, therefore, that stomachs with the lowest part of the greater curvature as far as 6 inches below the interiliac line, transverse colons dipping far into the true pelvis or ceca with the blind end low in the true pelvis are normal and the ability of these organs to function normally is independent of their position.

HAROLD E. SIMON, M.D.

THE CASE OF POSTOPERATIVE RUPTURE OF ABDOMINAL INCISIONS: Leonard Freeman. (Archives of Surgery, XIV, 1927, 600-604.) While rupture of an abdominal incision does not occur very frequently, it is very disconcerting when it does occur.

The usual explanations given for its occurrence are:

1. The giving way of sutures.
2. Unusual strains, such as coughing, etc.
3. Infection of the wound.
4. Failure of the healing process.
5. The formation of a hematoma.

While any one or several of the things mentioned may play a part in the giving way of abdominal incisions, they often do not appear to be the main factors. In many cases the author believes the primary cause to be inadequate closure of the peritoneum, leaving a gap in the suture line through which the omentum may force itself. This omental protrusion not only interferes with immediate union of the wound, but, as it becomes congested and swollen it acts as an expanding wedge resulting in separation of the tissues and weakening of the wound. Occasionally it may be bowel instead of omentum that protrudes through the peritoneum.

In support of this explanation are the observations: first, that ruptures are more often seen in the central and lower portion of the abdomen where the omentum is most in evidence; second, that tags of omentum have always been found in the wounds in the cases observed by the author; third, the frequent occurrence, in these cases, soon after operation, of tumefaction, serous discharge or unusual discomfort probably produced by such an incarceration; fourth, the well known tendency of omentum to protrude through a stab wound in the abdomen, and, fifth, the certainty with which ruptured wounds reunite when the omentum is swollen and adherent and can no longer enter the wound. A series of experiments have been performed which also seem to confirm this as an etiological factor.

The author urges that in closing the peritoneum greater care should be used by placing the sutures close together, and when the running stitch is employed, it should be drawn tight and frequently back-stitched and locked.

HAROLD E. SIMON, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

ACUTE MEDIASTINAL ADENITIS: Rudolph Bloom, M.D. (Arch. of Ped., February, 1927). For the past few years there has been noted by the author many cases of acute illness in children of a grippal type, characterized by fever, rather intense inflammation of the pharyngeal wall, fetid breath, coated tongue, and a certain amount of toxicity greater than that expected from the few physical signs accounting for the clinical picture. The general complaints of these children, most of whom are usually under six years of age, are loss of appetite, considerable deep-seated substernal soreness, a sense of "it hurts me" on swallowing, and a tendency to vomit on taking any kind of food as soon as ingested.

The picture is undoubtedly one of acute respiratory illness; but one is surprised by the entire absence practically of any physical signs in the lungs. The clinical picture slowly clears, the temperature gradually returns to normal at the end of six to twelve days, depending upon the severity of the infection and its extent, the appetite is restored, the cough and deep-seated substernal soreness disappear, irritablity decreases and convalescence occurs. *X*-ray does show some enlargement of the bronchial lymph nodes.

It is not the purpose to present this particular picture, that is here described, as a new disease, for it is believed that it occurs along with, or part of, that disease with such protean manifestations, which we call influenza. It is felt that acute mediastinal adenitis is a definite clinical entity, the presence of which may be suspected by a clinical picture as described above, and definitely determined by *X*-ray findings.

R. N. ANDREWS, M.D.

DIET IN THE DIARRHEA OF OLDER INFANTS: C. K. Johnson, M.D. (Archives of Pediatrics, February, 1927). Observation has been that diet is the important factor in treatment, and that while medicine has its place, it is of secondary importance. As pointed out by Kendall, the intestine harbors both fermentative and putrefactive, as well as other types of bacteria. It has also been pointed out that one may by an increased carbohydrate diet cause a predominance of the fermentative group, and by increasing the proteids cause a predominance of the putrefactive group.

Having arrived at a tentative diagnosis, and planning a diet based on this diagnosis, one will get good results in a majority of cases. If, however, he does not get good results, it would seem that the deductions were wrong, and a diet of opposite character should be tried.

The age element is important, as the younger infants, being usually fed on a formula with an addition of considerable carbohydrate, most frequently have a diarrhea of the fermentative type, while the older infants, being fed on a relatively mixed diet of higher proteid, are more apt to have a putrefactive diarrhea. If one has an infant of three or four months of age who develops a diarrhea while on a bottle with added carbohydrates, with loose stools, of sour odor, and evidently acid as indicated by irritation of the buttocks, he immediately suspects a fermentative diarrhea. The carbohydrates are omitted, the milk and water are boiled, with or without the addition of casein, or the infant can be put on protein milk.

If again one is confronted with an infant perhaps in the second year of life who has a diarrhea, the stools being loose, with a foul odor, and evidently not acid as shown by absence of skin irritation, one would treat this infant quite differently than the previous case and institute a diet with carbohydrate predominating. Preference as to diet in this latter group is malted milk and the starchy foods.

The author finds that a large majority of these older infants, generally over ten months, respond to a starch diet, with or without the addition of malted milk.

One of the newer theories regarding diarrhea seems to be based upon the idea that some infection, as a pyelitis, otitis, etc., is frequently the causative factor. We must not forget the possibility of such etiological factors as excessive heat, over-dressing, poor milk, poor hygiene, a poorly balanced formula and the like.

R. N. ANDREWS, M.D.

THE TREATMENT OF ERYSIPELAS IN INFANTS: Maxwell P. Borovsky, M.D. (Archives of Pediatrics, January, 1927.) During the past eight months at the Cook County Hospital, the author has instituted a method of treatment which seems to have reduced the mortality in infants to that of a very small proportion of the previous figure.

The involved area, no matter how extensive, is painted with 2 per cent mercurochrome, twice daily. It is a question whether this substance exerts its favorable influence by its local antiseptic action or by reaction from absorption. The former is more likely true. Improvement of the condition of the skin underlying the dye is readily determined by the disappearances of the infiltration and of the brawny feel of the skin. The dye is readily removable with acid alcohol, if this is found necessary.

Whole blood, 15 to 20 c.c. from an adult, preferably one of the parents, is injected every third or fourth day. The beneficial effect of the blood is due to three factors: the furnishing of antibodies, nutrition and stimulation of the spleen.

R. N. ANDREWS, M.D.

EYE, EAR, NOSE AND THROAT

SUPERVISORS:
VIRGIL J. SCHWARTZ,
PHYS. & SURG. BLDG., MINNEAPOLIS
E. L. ARMSTRONG,
FIDELITY BLDG., DULUTH

A DETAILED DESCRIPTION OF AN UNIQUE CASE OF RETINITIS STRIATA: George Slocum (Jackson Birthday Volume). A man, aged 30, who ten years before had suddenly and spontaneously lost the vision of his right eye, came in for examination. There is given in great detail a description of the fundus, the essential features of which are (1) diminution in size and color intensity of the vessels; (2) a widespread edema and detachment of the lower half of the retina, apparently progressing slowly toward reattachment as indicated by (3) numerous white, sharply-outlined striations extending horizontally and upward from the disc; (4) numerous white patches and spots scattered throughout the retina, some of these with pigment; (5) areas of diffuse retinal atrophy without exudate.

The white linear striations are interpreted to be lines of demarcation of a choroidal exudate (organized) at the margin of a former detachment now reattached. The latter process apparently progressed a small area at a time, beginning above and leaving now an area of detachment only below, as is so often the case. The upper temporal quadrant was apparently never detached.

VIRGIL J. SCHWARTZ, M.D.

LENS OPACITIES IN DIABETIC PATIENTS: Harry S. Gradle (Jackson Birthday Volume). A series of seventy-six hospitalized cases of diabetes were examined with corneal microscope, slit-lamp, plane mirror retinoscope, and ophthalmoscope for cataractous opacities of any size or density that could be demonstrated anywhere in the lens. Fifty-three per cent were found to have some involvement, twenty such cases being between forty and fifty years of age, eleven between fifty and sixty, and five between sixty and seventy. It must be remembered that not every cataract developing during diabetes can be regarded as a diabetic complication. The latter is most characteristic in younger people, as a bilaterial, subcapsular, rapidly-developing, homogeneous central opacity, becoming perinuclear (*i.e*, approaching the center of the lens) at a later period. The pigment, throughout the entire eye, loosens easily and floats off, frequently as a flood of black liquid. Clinically, however, and especially in older people, it is impossible to differentiate between senile and diabetic cataract. If the diabetes has been so managed that the patient is free of acetone and diacetic acid and the blood-sugar content is at a minimum level, a diabetic cataract may be operated upon quite safely. If these precautions are not taken there may be a loosening and discharge of pigment cells in the aqueous and the danger of infection is increased.

VIRGIL J. SCHWARTZ, M.D.

ROENTGENOLOGY

SUPERVISORS:
LEO G. RIGLER,
MPLS. GEN'L HOSPITAL, MINNEAPOLIS
A. U. DESJARDINS,
MAYO CLINIC, ROCHESTER

STUDIES OF THE ROENTGEN ERYTHEMA OF THE HUMAN SKIN: Ernst Pohle (Radiology, March 1927). Studies were made by means of the capillary microscope of the skin circulation following the administration of one erythema dose of roentgen rays of short wave length. These studies seem to indicate that complete restitution to the former state does not take place. The capillaries are decreased in number, elongated, the wall thickened, the diameter larger, and they respond somewhat slowly to heat and cold. This might explain the late effects frequently seen after repeated erythma doses.

The capillary changes following an exposure to one ultra-violet unit are very similar to those seen after the administration of unfiltered roentgen rays. They differ, however, in that the capillary changes are very brief and only temporary, after a single exposure. Long continued treatment may perhaps lead to chronic changes.

Further investigations dealing with the combined effect of roentgen rays and ultra-violet rays, and repeated exposures, on the skin capillaries will be reported in a later paper.

WALTER H. UDE, M.D.

DETERIORATION OF ANESTHETIC ETHER

According to the U. S. Pharmacopeia X: "Ether to be used for anesthesia must be preserved only in small, well closed containers, and is not to be used for this purpose, if the original container has been opened longer than twenty-four hours." The impurities found in ether are due to the presence of air and moisture, and the action of daylight, which leads to complex oxidations. Among the products found are hydrogen peroxide and most commonly irritant aldehyde. (Jour. A. M. A., Feb. 19, 1927, p. 588.)

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

INTERNATIONAL CLINICS. Vol. I, Thirty-seventh Series, 1927. Edited by Henry W. Cattell, A.M., M.D., and others. 304 pages. Illus. Philadelphia & London: J. B. Lippincott Company, 1927.

THE MEDICAL, SOCIAL, ECONOMIC, MORAL AND RELIGIOUS ASPECTS OF BIRTH CONTROL. S. Adolphus Knopf, M.D. Third editon, revised and enlarged. 66 pages. Illus. Paper, $0.25; cloth, $0.50. New York: American Birth Control League, Inc., 104 Fifth Avenue, 1926.

THE FIFTH AVENUE HOSPITAL CLINICS. First Series Based on the Material from the Semi-Monthly Staff Meetings. Edited by the Editorial Board: Joseph H. Forbes, M.D., D. S. D. Jessup, M.D., Milton J. Raisbeck, M.D., and Charles F. Tenney, M.D. 336 pages. Illus. Cloth, $5.00. New York: Paul B. Hoeber, Inc., 1927.

METHODS AND PROBLEMS OF MEDICAL EDUCATION. Sixth Series. Edited by Richard M. Pearce, Director Division of Medical Education, Rockefeller Foundation, New York. 275 pages. Illus. New York: The Rockefeller Foundation, 61 Broadway, 1927.

HISTORY TAKING AND RECORDING. James A. Corscaden, M.D., Associate in Obstetrics and Gynecology, Columbia University, New York. Price, $1.50, New York: Paul Hoeber, 1926.

This is a very painstaking and concise treatise on history taking. It points out what facts in histories are of value to the attending physician and how they should be obtained from the patient and how best recorded. It is especially valuable for internes and students and could be read with profit by all practicing physicians.

WILLIAM W. MOIR, M.D.

THE TIRED CHILD. Max Seham, M.D., Assistant Professor of Pediatrics, University of Minnesota, and Grete Seham, Ph.D., formerly Professor of Medical Chemistry, University of Minnesota, with a foreword by Isaac A. Abt, M.D. Illustrated. Price, $2.00. Philadelphia and London: J. B. Lippincott Company, 1926.

A great deal has been written during the past few years about functional conditions in childhood. These studies have referred almost entirely to problems in mental hygiene. The present book by the Sehams represents an intensive study of child-life, considering the non-medical conditions usually overlooked though often the fundamental causes for physical symptoms—chiefly fatigue.

The first part of the book is devoted to the study of the normal child. The authors consider his physical, social and mental characteristics during the first few years and conclude that at six years the child is physiologically unprepared for the closed-in curriculum of the schools.

The greater part of the book is devoted to the study of fatigue. This has been carried on in the schools of Minneapolis, in a special nutrition clinic, and in private practice. The fact is emphasized that chronic fatigue is recognized with difficulty because of its insidious nature. The usual symptoms found are poor posture, restlessness, lack of interest and an inability to concentrate.

By means of an unique questionnaire method, the child answers a long list of questions relating to tiring in the morning and in the evening, to his habits of reading, sleeping, playing, and outside activities. He is also asked to describe, in an efficiency questionnaire, any aches or pains, or difficulties with vision and hearing. A similar questionnaire is answered by the mother, and also by the teacher, with a few additional questions pertaining to school life. Finally, the gymnasium teacher answers the same questions. The result is a careful composite study of the life of the child viewed from almost every possible angle. Although there are objections to the questionnaire method, it would seem almost impossible not to receive much valuable information from the method as used by the authors.

It is interesting to learn that tired children average 75 per cent of the required sleep. The remainder of the necessary sleeping period is often spent in going to parties and movies, in listening to the radio, and reading books. Since the antidote of fatigue is play and recreation, parents are urged to cut down as much as possible on extra-curriculum activities, especially in the child who shows evidences of easy fatigability. The social life of the child, especially through puberty, should be cut down to a minimum.

A chapter is devoted to a schedule of home study of school work. The authors advise a maximum of seventy-five minutes of home work for the child during the pubertial period. This is a timely warning to those who force the child to do his maximum work during a period when his functional capacity may be definitely lessened. Stresses and strains are not handled well during the adolescent age.

The authors strongly advise against the fad of teaching children music too early in life. The brain centers that control the necessary coördinated movements do not fully develop till ten years of age, and time spent before this period is not efficiently used.

One realizes, after reading "The Tired Child," that the study of his social life is tremendously important but generally neglected. Too much emphasis, in the past, has been given to the organic pathology of childhood, with the result that medical men in general tend to consider a child well if disease has been ruled out. The authors of this book have found that only a small percentage of their fatigued children need treatment of organic pathology. What they do need is more rest and play and less work, a careful analysis of their functional capacities to see, hear and reason, and an insight into their emotional make-up to prevent the

results of undue pressures. It is only through such studies that fatigue can be avoided.

Each chapter is followed by a complete bibliography, which the student of child study will find very useful.

The book can be recommended very highly to anyone interested in child-life, and especially to the mother who finds that her child tires easily.

HYMAN S. LIPPMAN, M.D.

A DOCTOR'S MEMORIES. Victor C. Vaughan. 464 pages. Illus. $5.00. Indianapolis: The Bobbs-Merrill Company.

This book will be of unusual interest to the physician, for it is written by one of that profession and it is not only the story, well told, of a life of great accomplishment but it is also a history of the development of the science of medicine during the past fifty years. Dr. Vaughan started his interesting, colorful life by a stormy boyhood, due to the unusual conditions of the Civil War. His early education was first from his mother at home and then in several small colleges near his home in Missouri, but in 1874 he went to the University of Michigan, attracted by the excellent chemical laboratory, and here he remained until 1921, for the greater part of that time a member of the faculty. In 1877 he married Dora Taylor, a childhood sweetheart, and she ever afterwards occupied an important place in his life, ambitions and accomplishments. He says of her, "She has been my wise counselor in all the affairs of our joint lives. She has borne and reared to manhood five worthy sons, the eldest of whom sleeps in the soil of France. We have lived modestly, suffering no financial privation and desiring no luxuries. We have ridden in a Ford (our own) without shame and in a Pierce Arrow (our friends') without pride."

From then on he divides his life story into different aspects, instead of trying to carry the different threads together in chronological order. Under "Intellectual Life" he tells of the pleasant family-like faculty life presided over by President Angel and his gracious wife. To Ann Arbor in those days came many men and women of great renown who enjoyed the hospitality of the Vaughan home and remained devoted ffiends through the later years. In "The Medical School" one sees clearly where his greatest interest and pride lay. He says, "If I am leaving a memorial to my life's work, it lies in the medical school." He became acting dean in 1887 and from that time devoted his strongest energies and deepest thought to assembling a medical faculty and research library, at that time second to none in the country. Of the latter he says, "A medical school without a good research library is like an automobile without gasoline. It will not go." He does not believe in the full time professor because "he is a myth and it is fortunate that this is true for if he existed he would be worthless." The growth of the school was a testimonial to his good judgment both as an administrator and a lobbyist in the legislature.

He particularly enjoyed his contact with the medical students, appreciated their friendship, kept open house for them, watched their later progress with great interest and took great pleasure in the success or renown that came to some of them in later years. In addition to his other duties he was actively engaged in the practice of medicine for twenty years. He was drawn into this partly because he could not refuse the calls of his friends and colleagues and partly because he needed his fees to augment his salary, which never more than half met his modest living expenses. He greatly enjoyed this because it brought him into contact with many people, gave him ample opportunity to study human psychology and made him many firm and lasting friends. Another phase of his busy life was his work as a medical expert and from this he derived many interesting experiences and was able to contribute some valuable knowledge gained through experimental work.

He was early drawn into the Spanish-American War and saw service in the Philippines, where he had a severe attack of yellow fever which necessitated his being sent home. He then served on the Typhoid Commission and in view of our present knowledge it seems incredible that such conscientious work should yield so little toward solving the question of etiology. In 1917 he and his five sons had commissions in the World War, where he had charge of the communicable diseases. At the end of this chapter he says, "There is no armistice between medicine and disease. The conflict will continue as long as man walks the earth and the victory will ultimately be won by death. If man ceases to strive for wisdom he will sink into ignorance to which there is no bottom. The wheels of evolution are never standing still; they are constantly moving; they may go backward or forward."

The last chapter is on "Old Age" and is a classic in itself. He says that when a man comes to old age he is either a fool or a philosopher, and in this discussion he proves his place in the latter class. Anyone will find much of interest and value in this chapter but it will be of the greatest profit to him who has passed middle age and feels the touch of the frost of the years upon his brow. To such a one it will bring comfort, reconciliation and the ability to grow old gracefully, and also to realize the compensations that years of accomplishment may bring. Of himself he says, "I can truly say that with old age, as far as I have experienced it, I am content. The pleasure of living has grown and indeed the fast revolving years have only increased my interest in my environment."

This autobiography, with its philosophic touch, modestly telling of accomplishments, honors and happiness such as rarely are combined in any one man's life, will be a source of real inspiration to the young medical man and of equal interest to his older colleague. To the legion of men and women who have been in contact with the medical school at Ann Arbor it will have especial significance for the detailed descriptions of events and men will open up many memories. After reading it any one will have the impression that he has become acquainted with, not only a great man but also

a man with a great capacity for deriving happiness along the way of life, a man with a great appreciation of the human touch in all of life's relationships (a characteristic that many modern medical men will do well to imitate) and a man who greatly appreciates the value and pleasure of friendship.

MARGARET WARWICK, M.D.

PRUNES OR PANCAKES. Alfred Owre. 121 pages. $0.50. Minneapolis: University of Minnesota Press, 1926.

This small, paper covered volume will have its chief interest in the fact that its author is the Dean of the School of Dentistry at the University of Minnesota. It is another example of an individual who thinks he has found the key to health in his own interpretation of diet.

The author advocates but two meals a day with less meat but a great deal of fresh fruit and cheese to supply the protein. He also advises the drinking of a large amount of water, especially before meals, and less sweets than are enjoyed in the ordinary diet lists. He discusses diets for children as well as adults and pregnant women and gives sample menus with recipes and appended tables showing the caloric values of average helpings of the more common foods. He dismisses the popular subject of reducing by saying that anyone following his rules for eating will have no need to reduce. He also takes up the philosophy of diets, diet and the teeth and diets to prevent constipation.

The book is intended for the lay reader and holds little of interest for the physician. It suffers throughout by lack of clarity of style.

MARGARET WARWICK, M.D.

LIFE INSURANCE MEDICINE. A Study of Some of its Problems and Their Relation to Clinical Medicine by Members of the Medical Department of the New England Mutual Life Insurance Company. Volume 1. Boston: New England Mutual Life Insurance Co., 1926.

This book is the outcome of the study of the mass of statistics of insurance medicine. It tells us in what lines of medicine we have advanced and where we are stationary. It should be especially valuable to physicians doing public health or research work and to those examining the report of life insurance examinations.

WILLIAM W. MOIR, M.D.

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Annual meeting, July.

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Annual meeting, May

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Annual meeting, October.

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Regular meetings, January, May, September.
Annual meeting, third Wednesday in September.

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Harrison, E. E.—West Concord
Smith, F. D.—Kasson

FREEBORN COUNTY MEDICAL SOCIETY

Regular meetings, quarterly.
Annual meeting, December

President
Gullixson, A.—Albert Lea
Secretary
Gamble, P. M.—Albert Lea

Branham, D. S.—Albert Lea
Burns, H. D.—Albert Lea

Butturff, C. R.—Freeborn
Calhoun, F. W.—Albert Lea
Folken, F. G.—Albert Lea
Freeman, J. P.—Albert Lea
Freligh, W. P.—Albert Lea
Gamble, J. W.—Albert Lea
Gamble, P. M.—Albert Lea
Gamble, R. M.—Albert Lea
Gullixson, A.—Albert Lea

Kaasa, L. J.—Albert Lea
Kamp, B. A.—Albert Lea
Kooiker, Herman J.—Albert Lea
Nannestad, J. R.—Albert Lea
Palmer, C. F.—Albert Lea
Palmer, W. I.—Albert Lea
Schultz, J. A.—Albert Lea
Vollum, E. O.—Albert Lea
Von Berg, J. P.—Albert Lea

GOODHUE COUNTY MEDICAL SOCIETY

Annual meeting, first Tuesday in January

President
Anderson, S. H.—Red Wing
Secretary
Steffens, L. A.—Red Wing

Aanes, A. M.—Red Wing
Anderson, J. V.—Red Wing

Anderson, S. H.—Red Wing
Backe, Edmund—Kenyon
Bjorgo, C. W.—Cannon Falls
Claydon, L. E.—Red Wing
Conley, Alvah A.—Cannon Falls
Cremer, M. H.—Red Wing
Johnson, A. E.—Red Wing

Jones, A. W.—Red Wing
Kretzschmar, Karl E.—Los Angeles, Calif.
McGuigan, H. T.—Red Wing
Sawyer, H. P.—Goodhue
Smith, M. W.—Red Wing
Steffens, L. A.—Red Wing

HENNEPIN COUNTY MEDICAL SOCIETY

Regular meetings, first Monday of each month.
Annual meeting, first Monday in January.

President
Maxeiner, Stanley R.—Minneapolis
Secretary
Hansen, Erling—Minneapolis

Adair, F. L.—Minneapolis
Aling, C. P.—Minneapolis
Allen, H. W.—Minneapolis
Allison, R. G.—Minneapolis
Almquist, H. E.—Minneapolis
Altnow, Hugo O.—Minneapolis
Anderson, A. E.—Minneapolis
Anderson, Arnt G.—Minneapolis
Anderson, David D.—Minneapolis
Anderson, Edward D.—Minneapolis
Anderson, Ernest R.—Minneapolis
Anderson, Frank J.—Minneapolis
Anderson, Silas C.—Minneapolis
Annis, H. B.—Minneapolis
Arey, H. C.—Excelsior
Arvidson, C. G.—Minneapolis
Aune, Martin—Minneapolis
Aurand, W. H.—Minneapolis
Aurness, P. A.—Minneapolis
Avery, J. Fowler—Minneapolis

Baken, Melvin P.—Minneapolis
Baker, Alfred T.—Minneapolis
Baker, E. L.—Minneapolis
Baker, Looe—Minneapolis
Bakke, O. H.—Minneapolis
Barron, Moses—Minneapolis
Barton, E. R.—Minneapolis
Bass, G. W.—Minneapolis
Baxter, S. H.—Minneapolis
Beard, Archie H.—Minneapolis
Beard, R. O.—Minneapolis
Bedford, E. W.—Minneapolis
Bell, E. T.—Minneapolis
Bell, J. W., Sr.—Minneapolis
Benedict, E. E.—Minneapolis
Benjamin, A. E.—Minneapolis
Benn, F. G.—Minneapolis
Bessesen, A. N., Sr.—Minneapolis
Bessesen, A. N., Jr.—Minneapolis
Bessesen, Daniel H.—Minneapolis
Bessesen, W. A.—Minneapolis
Bishop, Chas. W.—Minneapolis
Bissell, F. S.—Minneapolis
Blake, Jas.—Hopkins
Blanton, Smiley—Minneapolis
Blaustone, Henry H.—Minneapolis
Blumenthal, Jacob—Minneapolis
Bockman, M. W. H.—Minneapolis
Booth, A. E.—Minneapolis
Boquist, E. T. W.—Minneapolis
Boquist, Harold S.—Minneapolis
Boreen, C. A.—Minneapolis
Bouman, H. A.—Minneapolis

Boynton, Ruth—Minneapolis
Bracken, H. M.—Claremont, Calif.
Brooks, Chas. N.—Minneapolis
Brown, Edgar D.—Minneapolis
Brown, R. S.—Minneapolis
Bulkley, Kenneth—Minneapolis
Burling, Temple—Minneapolis
Butler, John—Minneapolis
Byrnes, W. J.—Minneapolis

Cabot, George S.—Minneapolis
Cabot, V. S.—Minneapolis
Cady, L. H.—Minneapolis
Camp, W. E.—Minneapolis
Campbell, L. M.—Minneapolis
Campbell, Robert—Minneapolis
Carlaw, C. M.—Minneapolis
Cheleen, S. J.—Minneapolis
Cherry, Chas. H.—Minneapolis
Chesley, A. J.—Minneapolis
Cirkler, A. A.—Minneapolis
Clark, H. S.—Minneapolis
Condit, W. H.—Minneapolis
Cook, Henry Wireman—Minneapolis
Cooperman, H. O.—Minneapolis
Corbett, J. Frank—Minneapolis
Cosman, E. O.—Minneapolis
Crafts, Leo M.—Minneapolis
Cranmer, Richard R.—Minneapolis
Creighton, Ralph H.—Minneapolis
Crume, Geo. P.—Minneapolis
Curtin, John F.—Minneapolis
Cutts, George—Minneapolis

Dady, Elmer E.—Minneapolis
Dahl, Elmer O.—Minneapolis
Dahl, John A.—Minneapolis
Dahlstrom, A. W.—Minneapolis
Daniel, Donald H.—Minneapolis
Dart, Leslie O.—Minneapolis
Devereaux, T. G.—Wayzata
Dezell, Earl R.—Minneapolis
Deziel, G.—Minneapolis
Diehl, Harold S.—Minneapolis
Diessner, H. D.—Minneapolis
Disen, C. F.—Minneapolis
Dorge, Richard I.—Minneapolis
Doxey, G. L.—Minneapolis
Drake, C. R.—Minneapolis
Dreisbach, N.—Minneapolis
Dunlap, E. H.—Minneapolis
Dunn, Geo. R.—Minneapolis
Dunn, Louis—Minneapolis
Dunsmoor, F. A.—Minneapolis
Dutton, C. E.—Minneapolis
Dworsky, Samuel D.—Minneapolis

Ehrenberg, C. J.—Minneapolis
Eisenstadt, David H.—Minneapolis
Eitel, Geo. D.—Minneapolis

Eitel, G. G.—Minneapolis
Ellison, David E.—Minneapolis
Erb, F. A.—Minneapolis
Erdmann, C. A.—Minneapolis
Ericson, J. G.—Minneapolis
Everlof, J. L.—Minneapolis

Fansler, W. A.—Minneapolis
Farr, R. E.—Minneapolis
Feeney, John M.—Minneapolis
Fink, Walter H.—Minneapolis
Fischer, G.—Minneapolis
Fjeldstad, C. Alford—Minneapolis
Fleming, A. S.—Minneapolis
Flocken, Chas. F.—Minneapolis
Fowler, L. H.—Minneapolis
Fox, John M.—Minneapolis
Franzen, H. G.—Minneapolis
Friedell, A.—Minneapolis
Frudenfeld, H. H.—Minneapolis

Gammell, J. H.—Minneapolis
Garand, J. H.—Dayton
Gardner, Edwin L.—Minneapolis
Geist, Emil S.—Minneapolis
Giessler, Paul W.—Minneapolis
Gingold, Benjamin A.—Minneapoils
Goldberg, Isadore M.—Minneapolis
Gordon, Geo. J.—Minneapolis
Gosin, D. F.—Minneapolis
Grave, Floyd—Minneapolis
Green, E. K.—Minneapolis
Greene, W. P.—Minneapolis
Greisheimer, Esther M.—Minneapolis
Gunderson, Harley J.—Minneapolis
Gunderson, Nels A.—Minneapolis

Hacking Frank H.—Minneapolis
Hagen, G. L.—Minneapolis
Haggard, George D.—Minneapolis
Hall, J. M.—Minneapolis
Hall, S. S.—Minneapolis
Hallberg, C. A.—Minneapolis
Hamel, Arnold L.—Minneapolis
Hamilton, A. S.—Minneapolis
Hamlin, George B.—Minneapolis
Hammond, A. J.—Minneapolis
Hansen, Elmer H.—Minneapolis
Hansen, Erling—Minneapolis
Hansen, Olga S.—Minneapolis
Hanson, H. J.—Minneapolis
Hanson, H. V.—Minneapolis
Hare, E. R.—Minneapolis
Harrington, C. D.—Minneapolis
Harrington, F. E.—Minneapolis
Hartzell, Thos. B.—Minneapolis
Hastings, D. R.—Minneapolis
Haverfield, Addie R.—Minneapolis
Hayes, J. M.—Minneapolis
Head, G. D.—Minneapolis

Hearn, Wm. O. Minneapolis
Hedback, A. E. Minneapolis
Heim, Russell R. Minneapolis
Helk, H. H. Minneapolis
Hendrickson, J. F. Minneapolis
Henry, C. E. Minneapolis
Henry, Myron O. Minneapolis
Herbst, Wm. P. Minneapolis
Herman, Arthur L. Minneapolis
Hiebert, J. P. Minneapolis
Higbee, Paul A. Minneapolis
Hill, Eleanor J. Minneapolis
Hirschfelder, A. D. Minneapolis
Hirschfield, F. R. Minneapolis
Hoaglund, A. W. Minneapolis
Hobbs, C. A. Minneapolis
Hodge, S. V. Minneapolis
Hoiland, A. S. Minneapolis
Holen, T. Minneapolis
Holl, P. M. Minneapolis
Holm, Geo. A. Minneapolis
Holt, W. B. Minneapolis
Howard, William H. Minneapolis
Huenekens, E. J. Minneapolis
Hughes, Louis D. Minneapolis
Hutchinson, Chas. J. Minneapolis
Hynes, James Minneapolis
Hynes, John E. Minneapolis

Ikeda, Kano Minneapolis
Irvine, H. G. Minneapolis

Jackson, C. M. Minneapolis
Jennings, Mary H. Minneapolis
Jensen, Harry Minneapolis
Jensen, Louis C. Minneapolis
Jensen, M. J. Minneapolis
Johnson, A. E. Minneapolis
Johnson, A. Elof Minneapolis
Johnson, James A. Minneapolis
Johnson, Julius Minneapolis
Johnson, Nimrod A. Minneapolis
Johnson, Odin J. Minneapolis
Johnson, R. A. Minneapolis
Johnson, Selmer M. Minneapolis
Jones, G. M. Minneapolis
Jones, H. W. Minneapolis
Jones, W. A. Minneapolis
Josewich, Alexander Minneapolis

Kennedy, C. C. Minneapolis
Kennedy, Jane F. Minneapolis
Kennedy, R. Roy Minneapolis
Kibbe, O. A. Minneapolis
Kimball, H. H. Minneapolis
King, E. A. Minneapolis
King, W. R. Minneapolis
Kinsella, Thomas J. Oak Terrace
Kistler, C. M. Minneapolis
Kittelson, Olaf Minneapolis
Knight, H. L. Minneapolis
Knight, Ralph T. Minneapolis
Knight, Ray R. Minneapolis
Kohler, G. A. Minneapolis
Koller, Herman M. Minneapolis
Koller, L. R. Minneapolis
Kremer, Walter J. Minneapolis
Kriedt, Daniel Minneapolis
Kucera, Frank J. Hopkins
Kucera, Wm. J. Minneapolis
Kusske, A. L. New Ulm

Lajoie, John M. Minneapolis
Lapierre, A. P. Minneapolis
Lapierre, C. A. Minneapolis
Laurent, A. A. Minneapolis
LaVake, R. T. Minneapolis
Law, A. A. Minneapolis
Leavitt, H. H. Minneapolis
Lebowske, Jos. A. Minneapolis
Lee, H. M. Minneapolis
Leland, M. N. Minneapolis
Lemstrom, Jarl Minneapolis
Leonard, L. J. Minneapolis
Lind, C. J. Minneapolis
Lindquist, R. H. Minneapolis
Linner, H. P. Minneapolis
Lippman, Hyman S. Minneapolis
List, Walter E. Minneapolis
Litchfield, John T. Minneapolis
Litzenberg, J. C. Minneapolis
Logefeil, Rudolph C. Minneapolis
Loomis, E. A. Minneapolis
Lundgren, A. C. Minneapolis
Lynch, M. J. Minneapolis
Lyng, John A. Minneapolis
Lyon, E. P. Minneapolis
Lyon, J. D. Minneapolis
Lysne, Henry Minneapolis

McCarthy, Donald Minneapolis
McCartney, James S. Minneapolis
McDaniel, Orianna Minneapolis
McEachran, A. Minneapolis
McFarland, A. H. Minneapolis
McGandy, R. F. Minneapolis
McGeary, Geo. E. Minneapolis
McIntyre, George Minneapolis
McKinlay, C. A. Minneapolis
McKinley, J. C. Minneapolis
McKinney, F. S. Minneapolis
McPheeters, H. O. Minneapolis
MacDonald, A. E. Minneapolis
MacDonald, D. A. Minneapolis
MacDonald, Irving C. Minneapolis
Mach, Frank B. Minneapolis
Macnie, John S. Minneapolis
Maland, C. O. Minneapolis
Mann, A. T. Minneapolis
Marclay, W. J. Minneapolis
Mariette, Ernest Oak Terrace
Mark, D. B. Minneapolis
Matthews, Justus Minneapolis
Maxeiner, Stanley R. Minneapolis
May, W. H. Minneapolis
Mead, Marion A. Minneapolis
Merkert, Charles E. Minneapolis
Merkert, G. L. Minneapolis
Meyer, E. L. Minneapolis
Michael, J. C. Minneapolis
Michelson, H. E. Minneapolis
Miller, F. C. Minneapolis
Moir, Wm. W. Minneapolis
Monahan, R. H. Minneapolis
Moorhead, M. B. Minneapolis
Moren, Edwin Minneapolis
Morrison, A. W. Minneapolis
Murphy, Ignatius Minneapolis
Myers, J. A. Minneapolis

Nathanson, M. H. Minneapolis
Nelson, C. P. Minneapolis
Nelson, H. S. Minneapolis
Nelson, O. E. Minneapolis
Newhart, Horace Minneapolis
Nippert, L. A. Minneapolis
Nootnagel, C. F. Minneapolis
Noran, A. N. Minneapolis
Nordin, G. T. Minneapolis
Nordland, Martin Minneapolis
Noth, H. W. Minneapolis

O'Donnell, J. E. Minneapolis
Oberg, C. M. Minneapolis
Olson, F. A. Minneapolis
Olson, G. M. Minneapolis
Olson, Olaf A. Minneapolis
Olson, R. G. Minneapolis
Owre, Oscar Minneapolis

Parks, A. H. Minneapolis
Patterson, W. E. Minneapolis
Paulsen, E. I. Minneapolis
Pearce, N. O. Minneapolis
Pederson, Harold Minneapolis
Pederson, R. M. Minneapolis
Peppard, T. A. Minneapolis
Perry, Ralph St. J. Minneapolis
Peters, R. M. Minneapolis
Petersen, J. R. Minneapolis
Petersen, Thorvald Minneapolis
Peterson, O. H. Minneapolis
Peterson, Willard C. Minneapolis
Pettit, C. W. Minneapolis
Phelps, Kenneth A. Minneapoils
Platou, E. S. Minneapolis
Poehler, F. T. Minneapolis
Polzak, Jacob A. Minneapolis
Poppe, Fred H. Minneapolis
Pratt, Fred J. Minneapolis
Pratt, J. A. Minneapolis
Preine, I. A. Minneapolis
Prim, J. A. Minneapolis
Proshek, Charles E. Minneapolis

Quinby, Thomas F. Minneapolis
Quist, H. W. Minneapolis

Reed, Chas. A. Minneapolis
Rees, S. P. Minneapolis
Regnier, E. A. Minneapolis
Reynolds, J. S. Minneapolis
Richdorf, L. F. Minneapolis
Rishmiller, J. H. Minneapolis
Rizer, R. I. Minneapolis
Roan, Carl M. Minneapolis
Robb, Edwin F. Minneapolis
Roberts, Thos. S. Minneapolis
Roberts, W. B. Minneapolis
Robitshek, E. C. Minneapolis
Rochford, W. E. Minneapolis
Rodda, F. C. Minneapolis
Rodgers, C. L. Minneapolis
Rosen, S. Minneapolis
Rosenberg, Maurice N. Minneapolis
Rosenwald, R. M. Minneapolis
Rowe, Paul H. Minneapolis
Rowe, W. H. Minneapolis
Rudell, Gustave Minneapolis

Salt, C. G. Minneapolis
Sawatzky, Wm. A. Minneapolis
Schaaf, H. K. Minneapolis
Schefcik, J. F. Minneapolis
Scheldrup, N. H. Minneapolis
Schlutz, Frederic W. Minneapolis
Schmitt, A. F. Minneapolis
Schmitt, S. C. Minneapolis
Schneider, J. P. Minneapolis
Schussler, Otto F. Minneapolis
Schwartz, Virgil J. Minneapolis
Schwyzer, Gustav Minneapolis
Scott, F. H. Minneapolis
Seashore, Gilbert Minneapolis
Seham, Max Minneapolis
Selleseth, Iver Minneapolis
Simons, Jalmar Minneapolis
Simpson, E. D. Minneapolis
Simpson, J. D. Minneapolis
Siperstein, D. M. Minneapolis
Sivertsen, Ivar Minneapolis
Slocumb, Maude S. Minneapolis
Smith, A. M. Minneapolis
Smith, Arthur E. Minneapolis
Smith, Homer R. Minneapolis
Smith, Norman M. Minneapolis
Soderlind, A. Minneapolis
Solhaug, S. B. Minneapolis
Somerfield, H. A. Minneapolis
Spratt, C. N. Minneapolis
Stevenson, Frank W. Minneapolis
Stewart, C. A. Minneapolis
Stomel, Joseph Minneapolis
Strachauer, A. C. Minneapolis
Strout, E. S. Minneapolis
Strout, G. Elmer Minneapolis
Sturre, J. R. Minneapolis
Sundt, M. Minneapolis
Swanson, Roy E. Minneapolis
Sweetser, H. B., Sr. Minneapolis
Sweetser, H. B., Jr. Minneapolis
Sweetser, Theodore Minneapolis
Sweitzer, S. E. Minneapolis

Taft, John O. Minneapolis
Taft, Walter L. Minneapolis
Tanner, A. C. Minneapolis
Taylor, Rood Minneapolis
Tennyson, Theo. Minneapolis
Ternstrom, O. H. Minneapolis
Thomas, Geo. E. Minneapolis
Thomas, Geo. H. Minneapolis
Thomas, Gilbert J. Minneapolis
Thompson, H. H. Minneapolis
Tingdale, A. C. Minneapolis
Tunstead, Hugh J. Minneapolis
Turnacliff, D. D. Minneapolis
Tyrrell, C. C. Minneapolis

Ude, Walter H. Minneapolis
Ulrich, Henry L. Minneapolis
Undine, Clyde A. Minneapolis

Voyer, Emile O. Minneapolis

Waldron, Carl W. Minneapolis
Wanous, E. Z. Minneapolis
Ward, A. W. Minneapolis
Ward, Percy A. Minneapolis
Warham, T. T. Minneapolis
Watson, J. A. Minneapolis
Webb, R. C. Minneapolis
Weisman, S. A. Minneapolis
Welles, H. J. Minneapolis
Wethall, A. G. Minneapolis
Wetherby, Macnider Minneapolis
Weum, T. Wm. Minneapolis
Whetstone, Mary S. Minneapolis
White, S. Marx Minneapolis
Widen, W. F. Minneapolis
Wiese, H. F. B. Minneapolis
Wilcox, Archa E. Minneapolis
Wilcox, M. Russell Minneapolis
Willcutt, Clarence Minneapolis
Williams, H. L. Minneapolis
Williams, Robert Minneapolis
Witham, C. A. Minneapolis
Wittich, F. W. Minneapolis
Wohlrabe, A. A. Minneapolis
Wood, Douglas F. Minneapolis
Woodworth, Elizabeth Minneapolis
Wright, C. B. Minneapolis
Wright, Charles D'a Minneapolis
Wright, Franklin R. Minneapolis
Wynne, H. M. N. Minneapolis

Yoerg, O. W. Minneapolis

Zaworski, E. A. Minneapolis
Zierold, A. A. Minneapolis

HOUSTON-FILLMORE COUNTY MEDICAL SOCIETY

Regular meetings, May, August and October

Annual meeting October

President
Christianson, H. W.....Wykoff
Secretary
Helland, J. W.....Spring Grove

Anderson, Norman E.....Harmony
Belote, G. B.....Caledonia
Browning, W. E.....Caledonia
Christianson, H. W.....Wykoff

Davis, I. Grant.....Rushford
Drake, F. A.....Lanesboro
Eby, C. B.....Spring Valley
Grinnell, W. B.....Preston
Helland, G. M.....Spring Grove
Helland, J. W.....Spring Grove
Kierland, P. E.....Alexandria
Lannin, J. C.....Mabel
Nass, H. A.....Mabel

Onsgard, C. K.....Halstad
Onsgard, L. K.....Houston
Palmer, R. N.....Lanesboro
Rhines, D. C.....Caledonia
Sather, E. R.....Alexandria
Tierney, C. M.....Granger
Utley, J. D.....Montrose, Calif.
Williams, R. V.....Rushford
Wilson, R. H.....Harmony

KANDIYOHI-SWIFT COUNTY MEDICAL SOCIETY

Regular meetings, at call of President.

Annual meeting, January.

President
Fiksdal, M. J.....Willmar
Secretary
Scofield, C. L.....Benson

Branton, A. F.....Willmar

Branton, B. J.....Willmar
Daignault, Oscar.....Benson
Davison, P. C.....Willmar
French, H. S.....New London
Fiksdal, M. J.....Willmar
Frost, E. H.....Willmar
Hodapp, R. J.....Willmar

Jacobs, Jno. C.....Willmar
Johnson, Hans.....Kerkhoven
Kaufman, Wm. C.....Appleton
Little, D. W.....Appleton
Rains, J. M.....Willmar
Scofield, C. L.....Benson

LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, at call.

Annual meeting, November.

President
Hoidale, A. D.....Tracy
Secretary
Workman, H. M.....Tracy

Akester, Ward.....Marshall
Bossingham, O. N.....Lake Benton
Chorest, J. C. R.....Marshall

Engh, Sigfred.....Cottonwood
Ford, Burton C.....Marshall
Germo, Chas.....Balaton
Gray, F. D.....Marshall
Hermanson, Peter E.....Ivanhoe
Hoidale, A. D.....Tracy
Jacquot, G. L.....Tyler
Jensen, J. C.....Hendricks
Persons, C. E.....Marshall

Pearson, William T.....Russell
Robertson, J. B.....Cottonwood
Sanderson, E. T.....Minneota
Thordarson, Theo.....Minneota
Vadheim, A. L.....Tyler
Valentine, W. H.....Tracy
Workman, H. M.....Tracy
Workman, W. G.....Tracy

McLEOD COUNTY MEDICAL SOCIETY

Regular meetings, January, March, May, October

Annual meeting, May.

President
Schmidt, W. R.....Glencoe
Secretary
Langhoff, A. H.....Glencoe

Axilrod, D. L.....Hutchinson

Clement, J. B.....Lester Prairie
Holm, H. H.....Glencoe
Jenson, A. H.....Hutchinson
Klima, W. W.....Stewart
Kohler, F. G.....Minneapolis
Langhoff, A. H.....Glencoe
Sahr, W. G.....Hutchinson

Schmidt, W. R.....Glencoe
Scholpp, O. W.....Hutchinson
Sheppard, Fred.....Hutchinson
Sheppard, F. E.....Hutchinson
Trutna, Thos. J.....Silver Lake
Weissgerber, L. A.....Brownton

MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, May, August, October

Annual meeting, December

President
Brigham, Frank.....Watkins
Secretary
Danielson, K. A.....Litchfield

Brigham, Frank.....Watkins
Danielson, K. A.....Litchfield
Dulude, S. S.....Dassel
Lyman, F. V.....Grove City

Peterson, Alfred.....Dassel
Cutts, G. A. C.....Litchfield
Robertson, A. W.....Litchfield
Robertson, W. P.....Litchfield
Wilmot, H. E.....Litchfield

MOWER COUNTY MEDICAL SOCIETY

Regular meetings, last Thursday of each month.

Annual meeting, last Thursday in November.

President
Allen, Chas. C.....Austin
Secretary
Morrow, James J.....Austin

Allen, A. W.....Austin
Allen, Chas. C.....Austin
Cobb, Willis F.....Lyle
Coleman, F. B.....Austin

Davis, F. W.....Adams
Fisch, Herbert W.....Austin
Grise, W. B.....Austin
Hegge, C. A.....Austin
Hegge, O. H.....Austin
Henslin, A. E.....LeRoy
Hertel, G. E.....Austin
Leck, Clifford C.....Austin
Lewis, Charles F.....Austin
Lommen, P. A.....Austin

McKenna, J. K.....Austin
Melzer, G. R.....Lyle
Mitchell, R. S.....Grand Meadow
Morrow, James J.....Austin
Morse, M. P.....LeRoy
Rebman, E. C.....Austin
Robertson, P. A.....Austin
Sheedy, Chester L.....Austin
Torkelson, P. T.....Lyle

NICOLLET-LE SUEUR MEDICAL SOCIETY

Regular meetings, June, September, and December.

Annual meeting, December

President
Freeman, G. H.....St. Peter
Secretary
Daniels, J. W.....St. Peter

Aitkens, H. B.....Le Sueur Center
Baskett, Geo. T.....Retreat, Pa.

Baskett, Olive T.....Retreat, Pa.
Covell, W. W.....St. Peter
Daniels, J. W.....St. Peter
Dodge, F. A.....Le Sueur
Eirley, Clara S. Y.....Mt. Pleasant, Ia.
Ericson, Swan.....Le Sueur
Freeman, G. H.....St. Peter

Holtan, Theodore.....Waterville
LeClerc, J. E.....Le Sueur
McKeon, J. O.....Montgomery
Meilicke, W. A.....Nicollet
Norris, J. F.....St. Peter
Smith, B. F.....St. Peter
Strathern, F. P.....St. Peter

OLMSTED COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday in April, June, September and December
Annual meeting, December.

President
Linton, W. B. ..... Rochester

Secretary
Piper, M. C. ..... Rochester

Adams, S. Franklin ..... Rochester
Adson, A. W. ..... Rochester
Allen, Edgar V. ..... Rochester
Allen, Roy W. ..... Rochester
Allen, W. A. ..... Rochester
Alvarez, Walter C. ..... Rochester
Amberg, Samuel ..... Rochester
Anderson, C. M. ..... Rochester
Anderson, E. W. ..... Rochester
Anderson, Gilbert C. ..... Rochester
Anderson, Mark J. ..... Rochester
Asbury, J. T. ..... Rochester
Aurelius, J. Richards ..... Rochester
Balfour, D. C. ..... Rochester
Bannick, Edwin G. ..... Rochester
Barborka, C. J. ..... Rochester
Bargen, J. Arnold ..... Rochester
Barker, Nelson W. ..... Rochester
Barnes, A. R. ..... Rochester
Baumgartner, Conrad J. ..... Rochester
Baxter, Geoffrey H. ..... Rochester
Bayha, Carl H. ..... Rochester
Beach, Watson ..... Rochester
Benedict, W. L. ..... Rochester
Bergen, Ralph D. ..... Rochester
Berkman, D. M. ..... Rochester
Blackford, Launcelot M. ..... Rochester
Bliss, John H. ..... Rochester
Bodine, Marc W. ..... Rochester
Bonta, M. B. ..... Rochester
Boothby, W. M. ..... Rochester
Borgeson, Egbert J. ..... Rochester
Bowing, H. H. ..... Rochester
Bowles, John H. ..... Rochester
Braasch, Wm. F. ..... Rochester
Brading, Edward T. ..... Rochester
Bratrude, E. J. ..... Rochester
Brockbank, Thos. Wm. ..... Rochester
Broders, A. C. ..... Rochester
Brown, A. E. ..... Rochester
Brown, Felix M. ..... Rochester
Brown, G. E. ..... Rochester
Brown, P. W. ..... Rochester
Bueermann, Winifred H. ..... Rochester
Buie, L. A. ..... Rochester
Bumpus, H. C. ..... Rochester
Busby, James L. ..... Rochester
Caylor, Harold D. ..... Rochester
Chambers, Stanley O. ..... Philadelphia, Pa.
Chumley, Charles L. ..... Rochester
Coffey, Jay R. ..... Rochester
Comfort, Mandred W. ..... Rochester
Conner, H. M. ..... Rochester
Corbeille, Catherine ..... Rochester
Counseller, Virgil S. ..... Rochester
Craig, Wm. McK. ..... Rochester
Crane, Wm. W., Jr. ..... Rochester
Crenshaw, J. L. ..... Rochester
Crewe, J. E. ..... Rochester
Davis, Austin C. ..... Rochester
Davis, John D. ..... Rochester
Decker, Walter J. ..... Rochester
Desjardins, Arthur U. ..... Rochester
Dixon, Claude F. ..... Rochester
Dixon, Robert K. ..... Rochester
Dobson, Herbert V. ..... Rochester
Dolder, F. C. ..... Eyota
Doyle, J. B. ..... Rochester
Drips, D. G. ..... Rochester
Dunlap, H. F. ..... Rochester
Dunn, Halbert L. ..... Baltimore, Md.
Eskew, Don C. ..... Rochester
Etheredge, Shuler H. ..... Rochester
Eusterman, G. B. ..... Rochester
Evarts, Arrah B. ..... Rochester
Faust, Louis S. ..... Rochester
Fawcett, C. E. ..... Stewartville
Fehland, Harold R. ..... Rochester
Figi, F. A. ..... Rochester
Finney, W. P., Jr. ..... Rochester
Fishback, Frederick C. ..... Rochester
Flothow, Paul G. ..... Rochester
Ford, Frances A. ..... Rochester
Fortin, Harry J. ..... Rochester
Frederickson, Clyde H. ..... Rochester
Gaarde, F. W. ..... Rochester
Gay, James G. ..... Rochester
Giffin, H. Z. ..... Rochester
Gleason, Notery A. ..... Rochester
Goeckerman, W. H. ..... Rochester
Gorder, Arne C. ..... Rochester
Green, George F. ..... Rochester
Greene, Carl H. ..... Rochester
Greene, Earle I. ..... Rochester
Greenlee, Daniel P. ..... Rochester
Habein, Harold C. ..... Rochester
Hager, Benjamin H. ..... Rochester
Haines, S. F. ..... Rochester
Haldeman, Keene O. ..... Rochester
Hallenbeck, D. F. ..... Rochester
Hamrick, Robert A. ..... Rochester
Hand, John R. ..... Rochester
Hane, Richard L. ..... Rochester
Hanlon, Frank R. ..... Rochester
Hargis, Estes H. ..... Rochester
Harrington, Ethel R. ..... Rochester
Harrington, S. W. ..... Rochester
Harshbarger, Isaac L. ..... Rochester
Hartman, H. R. ..... Rochester
Hauser, Emil D. ..... Rochester
Havens, Fred Z. ..... Rochester
Heck, Frank J. ..... Rochester
Heetderks, D. R. ..... Rochester
Helmholz, H. F. ..... Rochester
Hempstead, B. E. ..... Rochester
Hench, Philip S. ..... Rochester
Henderson, Earl F. ..... Rochester
Henderson, M. S. ..... Rochester
Herrmann, S. F. ..... Rochester
Heyerdale, O. C. ..... Rochester
Holloway, Jackson K. ..... Rochester
Horton, Bayard T. ..... Rochester
Horwitz, Alec ..... Rochester
Huffman, Lester D. ..... Rochester
Hufford, Alvin R. ..... Rochester
Hunt, V. C. ..... Rochester
Jacobs, Minerd F. ..... Rochester
Jepson, P. N. ..... Boston, Mass.
Johnson, Walter R. ..... Rochester
Jones, H. T. ..... Rochester
Jones, Robert D. ..... Rochester
Jordan, Elverse M. ..... Rochester
Jordan, Ferdinand M. ..... Rochester
Joyce, G. T. ..... Rochester
Judd, E. S. ..... Rochester
Keith, N. M. ..... Rochester
Kennedy, Roger L. J. ..... Rochester
Kepler, E. J. ..... Rochester
Kepler, Helen M. ..... Rochester
Kernohan, James W. ..... Rochester
Kestel, John L. ..... Rochester
Kilbourne, A. F. ..... Rochester
Killins, Wendell A. ..... Rochester
Kleinheksel, John L. ..... Rochester
Korth, Zeno N. ..... Rochester
Lapp, Victor R. ..... Rochester
Latchford, James K. ..... Rochester
Leddy, Eugene T. ..... Rochester
Lemon, W. S. ..... Rochester
Lillie, H. I. ..... Rochester
Lillie, W. I. ..... Rochester
Lindsey, Maude L. ..... Rochester
Linton, W. B. ..... Rochester
Logan, A. H. ..... Rochester
Luden, Georgine ..... Rochester
Lundy, John S. ..... Rochester
McKaig, Carle B. ..... Pine Island
McKeithen, A. M. ..... Rochester
McNaugher, William M. ..... Rochester
McQuiggan, Mark R. ..... Rochester
McVicar, Chas. S. ..... Rochester
Magath, T. B. ..... Rochester
Martin, Clement L. ..... Rochester
Masson, D. M. ..... Rochester
Masson, J. C. ..... Rochester
May, James A. ..... Rochester
Mayo, C. H. ..... Rochester
Mayo, W. J. ..... Rochester
Maytum, Charles K. ..... Rochester
Meyerding, H. W. ..... Rochester
Mills, Ralph G. ..... Rochester
Moench, L. Mary ..... Rochester
Moersch, F. P. ..... Rochester
Moersch, H. J. ..... Rochester
Montgomery, Hamilton ..... Rochester
Moore, A. B. ..... Rochester
Morton, Chas. B. ..... Rochester
Mussey, R. D. ..... Rochester
Nagel, G. W. ..... Rochester
Nelson, Marque O. ..... Rochester
New, G. B. ..... Rochester
Nickel, Allen A. C. ..... Rochester
Nunn, Leslie L. ..... Eveleth
O'Leary, P. A. ..... Rochester
Ochsenhirt, Norman C. ..... Rochester
Offutt, Susan R. ..... Rochester
Ohlinger, L. B. ..... Rochester
Olson, Ernest A. ..... Pine Island
Omohundro, Miles P. ..... Rochester
Parker, H. L. ..... Rochester
Parker, J. William ..... Rochester
Parsons, Eloise ..... Rochester
Pemberton, J. deJ. ..... Rochester
Piper, M. C. ..... Rochester
Plankers, A. G. ..... Dubuque, Iowa
Plummer, H. S. ..... Rochester
Plummer, W. A. ..... Rochester
Pollock, L. W. ..... Rochester
Prangen, A. D. ..... Rochester
Prickman, Louis E. ..... Rochester
Pugliese, Frank M. ..... Rochester
Quale, Victor S. ..... Rochester
Radtke, H. P. ..... Rochester
Randall, Lawrence M. ..... Rochester
Rankin, F. W. ..... Rochester
Reddick, Charles E. ..... Rochester
Reid, J. Spence ..... Rochester
Rentschler, Calvin B. ..... Rochester
Rentschler, Edwin B. ..... Rochester
Rivers, A. B. ..... Rochester
Robertson, H. E. ..... Rochester
Rosenow, E. C. ..... Rochester
Rowntree, L. G. ..... Rochester
Rucker, Charles W. ..... Rochester
Sager, William W. ..... Rochester
Sanford, A. H. ..... Rochester
Schmitt, Earl O. G. ..... Rochester
Schulz, Irwin ..... Rochester
Shafter, Royce R. ..... Rochester
Sheldon, W. D. ..... Rochester
Shippey, Stuart H. ..... Rochester
Shugrue, John Joseph ..... Rochester
Simon, Harold E. ..... Rochester
Sistrunk, W. E. ..... Rochester
Smith, F. L. ..... Rochester
Smith, Harry L. ..... Rochester
Smith, Newton D. ..... Rochester
Snell, Albert M. ..... Rochester
Stacy, L. J. ..... Rochester
Stark, W. B. ..... Rochester
Stephens, Brooks P. ..... Rochester
Stephenson, Robert A. ..... Rochester
Steven, Geo. ..... Byron
Stinson, John W. ..... Rochester
Stuhler, Louis G. ..... Rochester
Sutherland, C. G. ..... Rochester
Swan, Theo. S. ..... Rochester
Synhorst, Alfred P. ..... Rochester
Thompson, H. L. ..... Rochester
Thompson, J. W., Jr. ..... Rochester
Viecelli, James D. ..... Rochester
Vinson, P. P. ..... Rochester
von Lackum, W. H. ..... Rochester
Wagener, H. P. ..... Rochester
Walters, H. W. ..... Rochester
Weir, J. F. ..... Rochester
Wellbrock, William L. ..... Rochester
Wheeler, Theodora ..... Rochester
White, Robert B. ..... Rochester
Whitten, Merritt B. ..... Rochester
Wickham, Mont. C. ..... Rochester
Wilder, R. M. ..... Rochester
Wilhelmj, Charles M. ..... Rochester
Wilkinson, Henry F. ..... Rochester
Williams, Henry L., Jr. ..... Rochester
Williams, Thomas B. ..... Rochester
Willius, F. A. ..... Rochester
Wilson, Louis B. ..... Rochester
Woltman, H. W. ..... Rochester
Wood, H. G. ..... Rochester
Yater, Wallace M. ..... Rochester
Ziegler, Lloyd H. ..... Rochester

PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Otter Tail, Wilkin, Grant, and Douglas Counties
Regular meetings, second Wednesday in January, April, July, and October.
Annual meeting, second Wednesday in October.

*President
Boysen, Peter ..... Pelican Rapids

Secretary
Satersmoen, Theo. ..... Pelican Rapids

Baker, A. C. ..... Fergus Falls
Boysen, Peter ..... Pelican Rapids
Brabec, F. J. ..... Perham
Broker, W. S. ..... Battle Lake
Burnap, W. L. ..... Fergus Falls
Cowing, P. G. ..... Evansville
Drought, W. W. ..... Fergus Falls
Esser, John ..... Perham

Estrem, C. O. — Fergus Falls
Freeborn, J. A. — Fergus Falls
Naegeli, Frank — Fergus Falls
Gilkinson, A. J. — Osakis
Goodson, Catherine M. — Retreat, Pa.
Hand, W. R. — Elbow Lake
Haskell, A. D. — Alexandria
Heiberg, E. A. — Fergus Falls
Kittelson, T. N. — Fergus Falls
Lee, W. A. — Fergus Falls
Leibold, H. H. — Parkers Prairie
Lewis, A. J. — Henning
Love, Fred A. — Carlos
Meckstroth, C. W. — Brandon
Meland, Ernest — Dalton
Meng, Eleanor L. — Fergus Falls
Meng, Wm. L. — Fergus Falls
Nelson, O. N. — Battle Lake
Otto, H. C. — Frazee
Parson, L. R. — Elbow Lake
Patterson, W. L. — Fergus Falls
Paulson, T. S. — Fergus Falls
Powers, F. W. — Barrett
Rimer, E. W. — Breckenridge
Sargeant, H. L. — Fergus Falls
Satersmoen, Theo. — Pelican Rapids
Sherping, O. Th. — Fergus Falls
Tanquist, E. J. — Alexandria
Thane, Benjamin — Breckenridge
Vail, James B. — Henning
Vigen, J. G. — Fergus Falls
Wray, W. E. — Campbell

RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of month except June, July and August.
Annual meeting, last Monday of January.

President
Savage, F. J. — St. Paul

Secretary
Schulze, Albert G. — St. Paul

Abbott, J. S. — St. Paul
Abramovich, J. H. — St. Paul
Ahrens, A. E. — St. Paul
Ahrens, A. H. — St. Paul
Alberts, Max W. — St. Paul
Alden, J. F. — St. Paul
Aldes, Harry — St. Paul
Alexander, F. H. — St. Paul
Allen, Mason — St. Paul
Armstrong, J. M. — St. Paul
Arnquist, A. S. — St. Paul
Arouni, Khalil — St. Paul
Arzt, C. P. — St. Paul
Bacon, Donald K. — St. Paul
Bacon, Knox — San Diego, Calif.
Bacon, L. C. — St. Paul
Balcome, F. E. — St. Paul
Ball, C. R. — St. Paul
Barry, L. W. — St. Paul
Barsness, Nellie — St. Paul
Beadie, W. D. — Cannon Falls
Beals, Hugh — St. Paul
Bell, C. C. — St. Paul
Benepe, L. M. — St. Paul
Bennion, P. H. — St. Paul
Bentley, Norman P. — St. Paul
Berrisford, Paul D. — St. Paul
Binger, H. E. — St. Paul
Birnberg, T. L. — St. Paul
Bock, R. A. — St. Paul
Boeckmann, Eduard — St. Paul
Boeckmann, Egil — St. Paul
Bohland, E. H. — St. Paul
Bole, R. S. — St. Paul
Bolstad, H. C. — St. Paul
Borg, Joseph F. — St. Paul
Bouma, L. R. — St. Paul
Brand, G. D. — St. Paul
Bray, E. R. — St. Paul
Brimhall, J. B. — St. Paul
Brodie, Walter D. — St. Paul
Brooks, D. F. — St. Paul
Brooks, G. F. — St. Paul
Brown, Ed. I. — St. Paul
Brown, John C. — St. Paul
Brown, S. E. — St. Paul
Burch, F. E. — St. Paul
Burfiend, G. H. — St. Paul
Burns, F. W. — St. Paul
Burns, R. M. — St. Paul
Busher, H. — St. Paul
Caldwell, Jas. P. — St. Paul
Caldwell, Kenneth S. — St. Paul
Cameron, J. A. — St. Paul
Campbell, J. E. — South St. Paul
Cannon, Harry — St. Paul
Carman, C. L. — St. Paul
Carman, Paul I. — St. Paul
Carroll, Wm. C. — St. Paul
Carter, Fred G. — St. Paul
Cavanaugh, J. O. — St. Paul
Chatterton, C. C. — St. Paul
Christiansen, A. — St. Paul
Christison, J. T. — St. Paul
Cobb, S. G. — St. Paul
Colby, Woodard — St. Paul
Cole, Wallace W. — St. Paul
Collie, H. G. — St. Paul
Colvin, A. R. — St. Paul
Comstock, A. E. — St. Paul
Conner, W. H. — St. Paul
Connor, C. E. — St. Paul
Constans, Geo. M. — St. Paul
Cook, Paul B. — St. Paul
Countryman, Roger S. — St. Paul
Cowern, E. W. — North St. Paul
Critchfield, L. R. — St. Paul
Crump, J. W. — St. Paul
Culligan, J. M. — St. Paul
Dack, Lloyd G. — St. Paul
Darling, J. B. — St. Paul
Daugherty, E. B. — St. Paul
Daugherty, L. E. — St. Paul
Davis, Herbert — St. Paul
Davis, William — St. Paul
Dedolph, Karl — St. Paul
Derauf, B. I. — St. Paul
Dickson, Thos. H., Jr. — St. Paul
Dittman, Geo. C. — St. Paul
Dohm, A. J. — St. Paul
Donohue, P. F. — St. Paul
Drake, Carl B. — St. Paul
Dunn, J. N. — St. Paul
Dunne, Gerald P. — St. Paul
Earl, George A. — St. Paul
Earl, Robert O. — St. Paul
Edlund, G. — St. Paul
Ely, O. S. — South St. Paul
Emerson, E. C. — St. Paul
Endress, E. K. — St. Paul
Engberg, E. J. — St. Paul
Ernest, G. C. — St. Paul
Eshelby, E. C. — St. Paul
Fahey, E. W. — St. Paul
Ferguson, J. C. — St. Paul
Fesler, Harold H. — St. Paul
Flagstad, A. E. — St. Paul
Fogarty, Chas. W. — St. Paul
Foley, F. E. B. — St. Paul
Freeman, C. D. — St. Paul
Fulton, J. F. — St. Paul
Gager, E. C. — St. Paul
Garbrecht, Arthur — St. Paul
Gardiner, D. G. — St. Paul
Geer, Everett K. — St. Paul
Gehlen, J. N. — St. Paul
Geissinger, John D. — St. Paul
Geist, George A. — St. Paul
Ghent, C. Harry — St. Paul
Ghent, M. M. — St. Paul
Giere, E. O. — St. Paul
Gilfillan, J. S. — St. Paul
Ginsberg, Wm. — St. Paul
Goltz, E. V. — St. Paul
Gratzek, Thos. — St. Paul
Greene, Charles L. — St. Paul
Gruenhagen, Arnold P. — St. Paul
Hagaman, Geo. K. — St. Paul
Hall, A. R. — St. Paul
Halper, Philip — St. Paul
Hammes, E. M. — St. Paul
Hammond, J. F. — St. Paul
Harmon, G. E. — St. Paul
Hartley, E. C. — St. Paul
Hauser, V. P. — St. Paul
Hawkins, V. J. — St. Paul
Heath, A. C. — St. Paul
Heck, Wm. W. — St. Paul
Hedenstrom, F. G. — St. Paul
Hengstler, W. H. — St. Paul
Hensel, C. N. — St. Paul
Herrmann, Edgar T. — St. Paul
Hesselgrave, S. S. — St. Paul
Hilger, A. W. — St. Paul
Hilger, D. D. — St. Paul
Hilger, L. A. — St. Paul
Hochfilzer, J. J. — St. Paul
Hoff, Alfred — St. Paul
Hoff, Peder A. — St. Paul
Hoffman, Max H. — St. Paul
Holcomb, J. T. — St. Paul
Holcomb, O. W. — St. Paul
Howard, Merrill A. — St. Paul
Howard, W. S. — St. Paul
Hullsiek, Harold — St. Paul
Hultkrans, Joel C. — St. Paul
Hunt, H. E. — St. Paul
Ide, A. W. — St. Paul
Ingerson, C. A. — St. Paul
Johnson, Asa M. — St. Paul
Johnson, Hartland C. — St. Paul
Johnson, O. F. — St. Paul
Johnson, Ray G. — St. Paul
Johnson, T. H. — St. Paul
Jones, D. C. — St. Paul
Jones, E. M. — St. Paul
Kadesky, David — St. Paul
Kamman, Gordon R. — St. Paul
Kannary, E. L. — St. Paul
Kelly, John V. — St. Paul
Kelly, Paul H. — St. Paul
Kennedy, W. A. — St. Paul
Kenny, H. F. — St. Paul
Kesting, Herman — St. Paul
King, George L. — St. Paul
King, Z. P. — St. Paul
Kistler, A. S. — St. Paul
Klein, H. N. — St. Paul
Knauff, M. K. — St. Paul
Kvitrud, G. — Minneapolis
Langenderfer, F. V. — St. Paul
Larsen, C. L. — St. Paul
Larson, M. L. — St. Paul
Lax, Morris H. — St. Paul
Leahy, Bartholomew — St. Paul
Leavenworth, Richard O. — St. Paul
Leitch, Archibald — St. Paul
Lepak, John A. — St. Paul
Lerche, William — St. Paul
Lewis, J. B. — South St. Paul
Lewis, W. W. — St. Paul
Lick, C. Louis — St. Paul
Little, W. J. — St. Paul
Lowe, Earl R. — South St. Paul
Lund, Arthur E. — St. Paul
Lundholm, A. M. — St. Paul
McBeath, Ewing C. — St. Paul
McCarthy, W. R. — St. Paul
McClanahan, J. H. — White Bear
McClanahan, T. S. — White Bear
McCloud, C. N. — St. Paul
McKeon, Owen — St. Paul
McLaren, Jeanette M. — St. Paul
McNevin, C. F. — St. Paul
Martineau, J. L. — St. Paul
Meyerding, E. A. — St. Paul
Mitchell, Frederick — St. Paul
Mogilner, S. N. — St. Paul
Molander, H. A. — St. Paul
Moquin, Marie A. — St. Paul
Morrissey, F. B. — St. Paul
Mortenson, N. G. — St. Paul
Moskovitz, Selic — St. Paul
Moss, Myer N. — St. Paul
Moynihan, T. J. — St. Paul
Muller, R. Theo. — St. Paul
Murphy, E. F. — St. Paul
Myers, Thos. — St. Paul
Neher, F. H. — St. Paul
Nelson, L. A. — St. Paul
Nesbit, Harold T. — St. Paul
Nichols, A. E. — St. Paul
Nippert, H. T. — St. Paul
Nordin, C. G. — St. Paul
Norris, Edgar H. — St. Paul
Nye, Katherine A. — St. Paul
Nye, Lillian L. — St. Paul
O'Brien, H. J. — St. Paul
O'Connor, I. A. — St. Paul
O'Connor, J. P. — St. Paul
Oerting, Harry — St. Paul
Ogden, Warner — St. Paul
Ohage, Justus — St. Paul
Ohage, Justus, Jr. — St. Paul
Olson, Chas. A. — St. Paul
Ostergren, E. W. — St. Paul
Pearson, F. R. — St. Paul
Pedersen, A. H. — St. Paul
Penny, L. E. — St. Paul
Perry, C. G. — St. Paul
Peterson, V. N. — St. Paul
Plondke, F. J. — St. Paul
Prendergast, H. J. — St. Paul
Ramsey, W. R. — St. Paul
Richards, E. T. F. — St. Paul
Richardson, Harold E. — St. Paul
Riggs, C. E. — St. Paul
Ritchie, H. P. — St. Paul
Rogers, John T. — St. Paul
Rosenthal, Robert — St. Paul
Rothrock, J. L. — St. Paul
Rothschild, H. J. — St. Paul

Roy, Philemon ..... St. Paul
Ruhberg, George N. ..... St. Paul
Rutherford, W. C. ..... St. Paul
Ryan, John J. ..... St. Paul
Ryan, Mark E. ..... St. Paul
Satterlund, Victor ..... St. Paul
Savage, F. J. ..... St. Paul
Schoch, R. B. ..... St. Paul
Schuldt, F. C. ..... St. Paul
Schulze, Albert G. ..... St. Paul
Schwyzer, Arnold ..... St. Paul
Senkler, G. E. ..... St. Paul
Setzer, H. J. ..... St. Paul
Shannon, W. Roy ..... St. Paul
Shapere, A. D. ..... St. Paul
Shellman, John L. ..... St. Paul
Shillington, M. A. ..... St. Paul
Shimonek, Anton ..... St. Paul
Simon, B. F. ..... St. Paul
Simon, Geo. H. ..... St. Paul
Skinner, H. O. ..... St. Paul
Snyder, G. W. ..... St. Paul
Sohlberg, Olof ..... St. Paul
Souster, B. B. ..... St. Paul
Sprafka, J. M. ..... St. Paul
Sterner, E. G. ..... St. Paul
Sterner, O. W. ..... St. Paul
Stevens, F. A. ..... Lake Elmo
Stewart, Alexander ..... St. Paul
Stierle, Adolph, Jr. ..... St. Paul
Stinnette, S. E. ..... St. Paul
Stolpestad, H. L. ..... St. Paul
Swanson, Edwin O. ..... St. Paul
Swanson, John A. ..... St. Paul
Sweeney, Arthur ..... St. Paul
Swendson, J. J. ..... St. Paul
Taylor, H. L. ..... St. Paul
Teisberg, C. B. ..... St. Paul
Tiber, L. J. ..... St. Paul
Tregilgas, H. R. ..... South St. Paul
Tuttle, Thos. D. ..... St. Paul
Van Slyke, Chas. A. ..... St. Paul
Veirs, Dean ..... St. Paul
Veirs, Ruby S. ..... St. Paul
Von der Weyer, Wm. ..... St. Paul
Waas, Charles W. ..... St. Paul
Wald, R. H. ..... St. Paul
Walker, R. E. ..... St. Paul
Wallinga, John H. ..... St. Paul
Warner, E. F. ..... St. Paul
Warnock, R. W. ..... St. Paul
Warren, E. L. ..... St. Paul
Warwick, Margaret ..... St. Paul
Welch, M. C. ..... St. Paul
Wheeler, M. W. ..... St. Paul
Whitacre, J. C. ..... St. Paul
Whitcomb, Ed. H. ..... St. Paul
White, J. S. ..... St. Paul
Whitmore, F. W. ..... St. Paul
Whitney, A. W. ..... St. Paul
Williams, Clayton ..... St. Paul
Winnick, J. B. ..... St. Paul
Wold, K. C. ..... St. Paul
Wolfe, H. H. ..... St. Paul
Ylvisaker, L. S. ..... St. Paul
Zander, C. H. ..... St. Paul
Zimmermann, H. B. ..... St. Paul

RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Marshall, Polk, Roseau, Pennington, Red Lake, Norman and Mahnomen Counties.

Regular meetings, April, September, December.
Annual meeting, December

President
Morley, G. A. ..... Crookston

Secretary
Oppegaard, M. O. ..... Crookston

Adkins, C. M. ..... Grygla
Anderson, J. K. ..... Crookston
Anderson, W. S. ..... Minneapolis
Bernard, B. C. ..... Thief River Falls
Bertelson, O. L. ..... Crookston
Biedermann, Jacob ..... Thief River Falls
Blegen, H. M. ..... Warren
Borreson, Baldwin ..... Remer
Bowers, J. T. ..... Thief River Falls
Bratrud, O. Edward ..... Warren
Bratrud, Theodor ..... Warren
Brown, Lyle L. ..... Crookston
Dean, Arthur C. ..... Crookston
Delmore, J. L. ..... Roseau
Dunlop, Alex H. ..... Crookston
Edstrom, Henry ..... Crookston
Erickson, J. L. ..... Twin Valley
Fried, Louis A. ..... Fosston
Froehlich, H. W. ..... Thief River Falls
Griffin, P. J. ..... Fertile
Henney, Wm. H. ..... McIntosh
Hodgson, H. H. ..... Crookston
Hollands, W. H. ..... Fisher
Holmes, W. B. ..... Ada
Holte, H. ..... Crookston
Kahala, Arthur ..... Crookston
Kirk, G. P. ..... East Grand Forks
Kjelland, J. S. ..... East Ellsworth, Wis.
Larson, A. L. ..... Fertile
Leitch, N. M. ..... Hallock
Locken, O. E. ..... Crookston
Mellby, O. F. ..... Thief River Falls
Milan, M. Geo. ..... Warren
Morley, G. A. ..... Crookston
Nelson, H. E. ..... Crookston
Nerad, Anton H. ..... Argyle
Norman, J. F. ..... Crookston
Ohnstad, J. L. ..... McIntosh
Oppegaard, C. L. ..... Crookston
Oppegaard, M. O. ..... Crookston
Overend, K. V. ..... Hallock
Roy, J. A. ..... Red Lake Falls
Sather, Allen ..... Fosston
Shaleen, A. W. ..... Hallock
Shedlov, A. ..... Fosston
Shelland, J. T. ..... Ada
Stratte, Harold C. ..... Lancaster
Stratte, J. J. ..... Hallock
Stuurmans, S. H. ..... Erskine
Swedenberg, A. W. ..... Thief River Falls
Turnbull, Robert ..... Fosston
Watson, N. M. ..... Red Lake Falls
Wattam, G. S. ..... Warren
Werner, O. S. ..... St. Hilaire
Wilson, Arthur N. ..... Warroad
Wiltrout, I. Geo. ..... Oslo

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings, at call of president.
Annual meeting, May

President
Dubbe, F. H. ..... New Ulm

Secretary
Meierding, Wm. A. ..... New Ulm

Adams, J. L. ..... Morgan
Dubbe, F. H. ..... New Ulm
Eckstein, A. W. ..... Comfrey
Fritsche, Albert ..... New Ulm
Fritsche, L. A. ..... New Ulm
Hammermeister, Theodore F. ..... New Ulm
Jamieson, Earl ..... Walnut Grove
Kiefer, M. A. ..... Sleepy Eye
Kolset, Carl D. ..... Sanborn
Madden, John F. ..... Gibbon
Meierding, Wm. A. ..... New Ulm
Pederson, O. J. ..... Hanska
Peterson, R. A. ..... Vesta
Reineke, George F. ..... New Ulm
Rothenburg, J. C. ..... Springfield
Saffert, Cornelius A. ..... New Ulm
Schoch, J. L. ..... New Ulm
Seifert, Otto J. ..... New Ulm
Shroder, J. S. ..... Springfield
Strickler, A. F. ..... Sleepy Eye
Vogel, Joseph ..... New Ulm
Vogtel, Melvin A. ..... Minneapolis
Weiser, Geo. B. ..... New Ulm
Wellcome, J. W. B. ..... Sleepy Eye
Wohlrabe, E. J. ..... Springfield

RICE COUNTY MEDICAL SOCIETY

Regular meetings, quarterly.
Annual meeting, January

President
Traeger, C. A. ..... Faribault

Secretary
Plonske, C. J. ..... Faribault

Babcock, F. M. ..... Northfield
Davis, F. U. ..... Faribault
Dungay, Neil S. ..... Northfield
Francis, David W. ..... Morristown
Haessly, S. B. ..... Faribault
Hanson, A. M. ..... Faribault
Huxley, F. R. ..... Faribault
Kanne, C. W. ..... Faribault
Lee, W. P. ..... Northfield
Lexa, F. J. ..... Lonsdale
McBroom, D. E. ..... Faribault
Mayland, M. L. ..... Faribault
Meyer, P. F. ..... Faribault
Moses, Joseph, Jr. ..... Northfield
Plonske, C. J. ..... Faribault
Robilliard, C. M. ..... Faribault
Robilliard, W. H. ..... Faribault
Rumpf, C. W. ..... Faribault
Rumpf, W. H. ..... Faribault
Smith, P. A. ..... Faribault
Traeger, C. A. ..... Faribault
Warren, F. S. ..... Faribault
Wilson, Warren ..... Northfield
Wilson, W. E. ..... Northfield

ST. LOUIS COUNTY MEDICAL SOCIETY

St. Louis, Lake, Cook, and Carlton Counties.
Regular meetings, second Thursday of month.
Annual meeting, second Thursday of October.

President
Hirschboeck, F. J. ..... Duluth

Secretary
Lepak, F. J. ..... Duluth

Abbott, Wm. P. ..... Duluth
Adams, B. S. ..... Hibbing
Alexander, Clifford E. ..... Duluth
Anderson, Hilding C. ..... Duluth
Arminen, K. V. ..... Duluth
Armstrong, E. L. ..... Duluth
Athens, A. G. ..... Duluth
Ayres, G. T. ..... Ely
Bagley, W. R. ..... Duluth
Bakkila, Henry ..... Duluth
Bardon, Richard ..... Duluth
Barney, L. A. ..... Duluth
Berdez, G. L. ..... Duluth
Bergquist, K. E. ..... Duluth
Bianco, A. J. ..... Duluth
Binet, H. E. ..... Grand Rapids
Blacklock, S. S. ..... Hibbing
Blakely, C. C. ..... Barnum
Block, Phoebe P. ..... Virginia
Boman, P. G. ..... Duluth
Bowen, Robert L. ..... Hibbing
Boyer, S. H. ..... Duluth
Bradley, E. L. ..... Superior, Wis.
Bray, C. W. ..... Biwabik
Briggs, F. W. ..... Duluth

Brunet, L. M. ..... Cloquet
Bullen, F. W. ..... Hibbing
Burns, R. L. ..... Two Harbors
Carstens, C. F. ..... Hibbing
Chapman, T. L. ..... Duluth
Cheney, E. L. ..... Duluth
Christensen, E. P. ..... Two Harbors
Clark, F. F. ..... Duluth
Clement, T. G. ..... Duluth
Collins, A. N. ..... Duluth
Collins, H. C. ..... Duluth
Cosgrove, J. H. ..... Duluth
Coventry, W. A. ..... Duluth
Daniels, H. A. ..... Eveleth
Davis, B. F. ..... Duluth
Davis, H. S. ..... Duluth
Doolittle, L. E. ..... Duluth
Drenning, F. C. ..... Duluth
Eckman, P. F. ..... Duluth
Eisenman, W. G. ..... Chisholm
Ekblad, J. W. ..... Duluth
Eklund, Wm. J. ..... Duluth
Elias, F. J. ..... Duluth
Empie, W. M. ..... Virginia
Eppard, R. M. ..... Cloquet
Estrem, T. A. ..... Hibbing
Ewens, H. B. ..... Virginia
Ferreira, G. J. ..... Aurora
Fischer, Mario McC. ..... Duluth
Fleming, James ..... Cloquet
Forbes, R. S. ..... Duluth
Fuerste, Frederick ..... Proctor
Gardner, R. D. ..... Eveleth
Gauthier, W. L. ..... Virginia
Gillespie, M. G. ..... Duluth
Gillespie, N. H. ..... Duluth
Giroux, A. A. ..... Duluth
Gowan, L. R. ..... Duluth
Graham, David ..... Duluth
Graham, R. D. ..... Duluth
Graham, Robert ..... Duluth
Grawn, F. A. ..... Duluth
Gray, Royal C. ..... Cook
Greeley, L. O. ..... Duluth
Ground, H. T. ..... Virginia
Hall, Andrea E. ..... Virginia
Haney, C. L. ..... Duluth
Harris, C. N. ..... Chisholm
Hatch, W. E. ..... Duluth
Hayes, M. F. ..... Nashwauk
Heimark, O. E. ..... Duluth
Hill, Frederick E. ..... Duluth
Hirschboeck, F. J. ..... Duluth
Hirschfield, M. S. ..... Duluth
Hovde, H. ..... Duluth
Hursh, M. M. ..... Grand Rapids
Jensen, T. J. ..... Duluth
Kean, N. D. ..... Coleraine
Kerlan, M. ..... Moose Lake
Keyes, C. R. ..... Duluth
Kiesling, I. H. ..... Nashwauk
King, W. S. ..... Eveleth
Klein, Harry ..... Duluth
Kliman, Frank E. ..... Duluth
Knapp, F. N. ..... Duluth
Kohlbry, C. O. ..... Duluth
Kraft, Peter ..... Duluth
Kuth, J. R. ..... Duluth
Laird, A. T. ..... Nopeming
Lenont, C. B. ..... Virginia
Lepak, F. J. ..... Duluth
Lindgren, E. I. ..... Duluth
Litman, Samuel N. ..... Duluth
Loofbourrow, Elias H. ..... Keewatin
Lum, C. E. ..... Duluth
McCarty, P. D. ..... Ely
McComb, C. F. ..... Duluth
McCoy, Mary ..... Duluth
McDaniel, S. P. ..... Mountain Iron
McDonald, A. L. ..... Duluth
McGiffert, E. N. ..... Duluth
McHaffie, O. L. ..... Duluth
McIntyre, E. H. ..... Virginia
McMurtry, Walter C. ..... Virginia
McNutt, John R. ..... Two Harbors
MacRae, Gordon C. ..... Duluth
Magie, W. H. ..... Duluth
Magney, F. H. ..... Duluth
Manley, J. R. ..... Duluth
Mattill, P. M. ..... Oak Terrace
Merriman, L. L. ..... Duluth
Morcom, H. W. ..... Duluth
More, C. W. ..... Eveleth
Morsman, L. W. ..... Hibbing
Morss, C. R. ..... Zumbrota
Murray, D. D. ..... Duluth
Nelson, E. H. ..... Chisholm
Nicholson, M. A. ..... Duluth
Olson, Albert E. ..... Duluth
Oredson, O. A. ..... Duluth
Pake, S. G. ..... Duluth
Parker, O. W. ..... Ely
Paulson, G. A. ..... Duluth
Payette, C. H. ..... Duluth
Pennie, D. F. ..... Duluth
Perley, A. E. ..... Chisholm
Peterson, Edward ..... Buhl
Power, J. E. ..... Duluth
Raadquist, C. S. ..... Hibbing
Raihala, John ..... Virginia
Raiter, Franklin W. S. ..... Cloquet
Raiter, Roy F. ..... Cloquet
Reynolds, Hugh ..... Hibbing
Robinson, J. M. ..... Duluth
Rood, D. C. ..... Duluth
Rowe, O. W. ..... Duluth
Rudie, P. S. ..... Duluth
Ryan, W. J. ..... Duluth
St. Clair, G. G. ..... Duluth
Scherer, C. A. ..... Duluth
Schroder, C. H. ..... Duluth
Seashore, D. E. ..... Duluth
Shapiro, E. Z. ..... Duluth
Shaw, A. W. ..... Buhl
Slyfield, F. F. ..... Duluth
Smith, C. M. ..... Duluth
Smith, E. K. ..... Duluth
Spicer, F. W. ..... Duluth
Strobel, W. G. ..... Duluth
Stuart, A. B. ..... Cloquet
Sukeforth, L. A. ..... Duluth
Sutherland, H. N. ..... Ely
Swenson, Arnold O. ..... Duluth
Swenson, Paul C. ..... Duluth
Taylor, C. W. ..... Duluth
Tibbetts, M. H. ..... Duluth
Tilderquist, D. L. ..... Duluth
Tuohy, E. L. ..... Duluth
Turnbull, F. M. ..... Duluth
Urberg, S. E. ..... Duluth
Van de Steeg, Wm. G. ..... Biwabik
Vercellini, C. E. ..... Duluth
Walker, A. E. ..... Duluth
Webber, Edward E. ..... Proctor
Weber, M. L. ..... Duluth
Webster, H. E. ..... Duluth
Weirick, Howard R. ..... Hibbing
Wheeler, D. W. ..... Duluth
Wilkinson, Stella ..... Duluth
Winter, J. A. ..... Duluth
Young, T. O. ..... Duluth
Young, V. A. ..... Duluth
Zlatovski, Michael ..... Duluth

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, first Thursday in March, June, September, December.
Annual meeting, first Thursday in June.

President
Maertz, W. F. ..... New Prague

Secretary
Reiter, H. W. ..... Shakopee

Buck, Fred H. ..... Shakopee
Eklund, E. J. ..... Norwood
Fischer, H. P. ..... Shakopee
Fischer, P. M. ..... Shakopee
Hebeisen, M. B. ..... Carver
Henriksen, H. G. ..... Elko
Juergens, H. M. ..... Belle Plaine
McKeon, James ..... St. Paul
Maertz, W. F. ..... New Prague
Moloney, G. R. ..... Belle Plaine
Nagel, H. D. ..... Waconia
Novak, E. E. ..... New Prague
Olson, Chester J. ..... Belle Plaine
Phillips, W.H. ..... Jordan
Reiter, H. W. ..... Shakopee
Schneider, H. A. ..... Jordan
Simons, Bern. H. ..... Chaska
Westerman, F. C. ..... Montgomery
Wohlrabe, Clarence ..... Springfield

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Pipestone, Rock, Murray, Nobles, Cottonwood and Jackson Counties.
Regular meetings, May and November.
Annual meeting, November.

President
Chadbourn, A. G. ..... Heron Lake

Secretary
McKeown, E. G. ..... Pipestone

Arnold, E. W. ..... Adrian
Atkins, G. L. ..... Jackson
Basinger, H. P. ..... Windom
Basinger, Harvey R. ..... Mountain Lake
Benjamin, W. G. ..... Pipestone
Bofenkamp, F. W. ..... Luverne
Bong, J. H. ..... Jasper
Brown, A. H. ..... Pipestone
Chadbourn, A. G. ..... Heron Lake
Cress, P. J. ..... Ellsworth
DeBoer, Hermanus ..... Edgerton
Ditmeier, L. M. Gerber ..... Jasper
Dolan, C. P. ..... Worthington
Doms, H. C. ..... Slayton
Doms, Wm. ..... Woodstock
Dudley, J. H. ..... Windom
Golden, C. M. ..... Tyler
Halloran, Walter ..... Jackson
Hilger, J. M. ..... Iona
Hitchings, W. S. ..... Lakefield
Johnson, Ellsworth ..... Windom
Kelling, Louis F. ..... Lakefield
Knudtson, H. M. ..... Browerville
Leebens, J. H. ..... Lismore
Lowe, Thos. ..... Pipestone
McCrea, James ..... Fulda
McKeown, E. G. ..... Pipestone
Manson, F. M. ..... Worthington
Metcalf, F. W. ..... Fulda
Mork, B. O. ..... Worthington
Patterson, W. E. ..... Westbrook
Piper, Wm. A. ..... Mountain Lake
Rose, J. T. ..... Lakefield
Schutz, Elmer S. ..... Mountain Lake
Sherman, C. L. ..... Luverne
Slater, S. A. ..... Worthington
Smallwood, J. T. ..... Worthington
Sogge, L. ..... Windom
Taylor, Wm. J. ..... Pipestone
Thorson, E. O. ..... Luverne
Tiedemann, Elmer J. ..... Adrian
Tofte, Josephine ..... Dawson
Waller, Joseph D. ..... Wilmont
Warren, C. L. ..... Brewster
Watson, F. G. ..... Worthington
Williams, Leon A. ..... Slayton
Wright, C. O. ..... Luverne

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Regular meetings, monthly, fourth Thursday.
Annual meeting, April

President
Libert, John N.....St. Cloud

Secretary
Stangl, P. E.....St. Cloud

Adams, L. P.....St. Cloud
Boehm, J. C.....St. Cloud
Brigham, C. F.....St. Cloud
Buscher, Julius.....Albany
Clark, H. B.....St. Cloud
DuBois, J. A.....Sauk Center
DuBois, J. F.....Sauk Center
Fleming, T. N.....St. Cloud
Freeman, W. L.....St. Cloud
Friesleben, Wm.....Sauk Rapids
Gelz, J. J.....St. Cloud
Goehrs, H. W.....St. Cloud
Groebbner, O. A.....Cold Spring
Haberman, E.....Osakis
Hemstead, Werner.....St. Cloud
Holdridge, Geo.....Foley
Johnson, Walfred.....Sauk Center
Jones, Richard N.....Richmond
Kern, M. J.....St. Cloud
Kingsbury, E. M.....Clearwater
Kohler, D. W.....St. Joseph
Kuhlman, Aug.....Melrose
Lewis, C. B.....St. Cloud
Libert, John N.....St. Cloud
McDowell, J. P.....St. Cloud
McKibben, H. E.....St. Cloud
Mahwald, A.....Albany
Meyer, A. A.....Melrose
Moynihan, A. F.....Sauk Center
Myre, C. R.....Paynesville
Pfaff, E. K.....Shoals, Ind.
Rathbun, C. A.....St. Cloud
Richards, W. B.....St. Cloud
Richardson, Fred S.....Belgrade
Ridgeway, Alexander.....Elrosa
Schatz, F. J.....St. Cloud
Sherwood, G. E.....Kimball
Stangl, Fred.....St. Cloud
Stangl, P. E.....St. Cloud
Sutton, Chas. S.....St. Cloud
Sweetman, R. H.....Sauk Center

STEELE COUNTY MEDICAL SOCIETY

Regular meetings, odd months, second Tuesday.
Annual meeting, November

President
Quigley, T. C.....Owatonna

Secretary
McIntyre, John A.....Owatonna

Ertel, E. Q.....Ellendale

Gault, C. C.....Owatonna
Hart, A. B.....Owatonna
Hart, Alfred B., Jr.....Owatonna
McIntyre, John A.....Owatonna
Melby, Benedik.....Blooming Prairie
Nelson, Ernest J.....Owatonna
Peterson, Christian.....Owatonna
Quigley, T. C.....Owatonna
Senn, E. W.....Owatonna
Smersh, F. M.....Owatonna
Smersh, J. F.....Owatonna
Stewart, A. B.....Owatonna

UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Crow Wing, Morrison, Cass, Todd, Wadena, Clearwater, Koochiching, Hubbard, Itasca, and Beltrami Counties.
Regular meetings, June and January.
Annual meeting, January

President
Kelly, B. W.....Aitkin

Secretary
Badeaux, G. I.....Brainerd

Agnew, Allen T.....International Falls
Allen, F. A.....Crosby
Allen, F. H.....Staples
Anderson, C. E.....Brainerd
Badeaux, G. I.....Brainerd
Beise, R. A.....Brainerd
Carlson, H. A.....Brainerd
Christie, G. R.....Long Prairie
Christie, R. L.....Long Prairie
Corrigan, J. E.....Spooner
Craig, C. C.....International Falls
Crowl, V. C.....Home Gardens, Cal.
Davis, L. Thomas.....Wadena
Davis, Thayer C.....Wadena
Forrest, C. G.....Clearbrook
Garlock, A. V.....Bemidji
Garlock, Dewitt H.....Bemidji
Gerber, Milo P.....Brainerd
Ghostley, Mary C.....International Falls
Goodheart, C. J.....Akely
Hall, P. M.....Ah-Gwah-Ching
Hawkinson, L. F.....Brainerd
Healy, R. T.....Pierz
Holst, C. F.....Little Falls
Holst, J. B.....Little Falls
House, Z. E.....Cass Lake
Houston, C. A.....Park Rapids
Johnson, E. W.....Bemidji
Kelly, B. W.....Aitkin
Kenyon, Paul.....Wadena
Kerlan, S. Z.....Aitkin
Laney, R. L.....Puposky
Laughlin, J. T.....Grey Eagle
McHugh, Roderick F.....Aitkin
McKinnon, J. J.....Wadena
Marcum, E. H.....Bemidji
Miller, W. A.....New York Mills
Moyer, Ralph E.....Bemidji
Nelson, Nesmith.....Brainerd
Nomland, Ruben.....Brainerd
Ortman, John W.....Pierz
Osburn, B. F.....International Falls
Pengelly, E. J.....Crosby
Pierce, Chas. H.....Wadena
Ratcliffe, J. J.....Aitkin
Reeves, C. E.....Eagle Bend
Roberts, L. M.....Little Falls
Rosenfield, A. B.....Pequot
Schwyzer, R.....Blackduck
Shannon, S. S.....Crosby
Simons, Edwin J.....Weanville
Smith, B. A.....Crosby
Thabes, J. A.....Brainerd
Van Valkenburg, B. F.....Long Prairie
Van Valkenburg, F. W.....Long Prairie
Watson, A. M.....Royalton
Watson, John D.....Holdingford
Wilcox, F. L.....Walker
Will, W. W.....Bertha
Williams, R. J.....Pine River

WABASHA COUNTY MEDICAL SOCIETY

Annual meeting, first Thursday after first Monday in July.

President
Collins, J. S.....Wabasha

Secretary
Wilson, W. F.....Lake City

Anderson, Arnold S.....Wabasha

Bayley, E. H.....Lake City
Bowers, H. E.....Lake City
Cochrane, W. J.....Lake City
Collins, J. S.....Wabasha
Dempsey, D. P.....Kellogg
Fleischbauer, D. S.....Wabasha
Radabaugh, R. C.....Hastings
Replogle, W. H.....Wabasha
Slocumb, J. A.....Plainview
Sutton, L. F.....Mazeppa
Wilson, W. F.....Lake City

WASECA COUNTY MEDICAL SOCIETY

Annual meeting, December.

President
McIntire, H. M.....Waseca

Secretary
Swenson, O. J.....Waseca

Bergman, O. B.....Janesville
Blanchard, H. G.....Waseca
Hagen, H. O.....New Richland
Leopard, B. A.....New Richland
McIntire, H. M.....Waseca
Miller, H. A.....Waseca
O'Hara, J. J.....Janesville
Swartwood, F. A.....Waseca
Swenson, O. J.....Waseca

WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of month.
Annual meeting, second Tuesday in December.

President
Boleyn, E. S.....Stillwater

Acting Secretary
Landeen, F. G.....Stillwater

Blakey, A. R.....Stillwater

Boleyn, E. S.....Stillwater
Combacker, L. C.....Stillwater
Culver, Lucian G.....Stillwater
Haines, J. H.....Stillwater
Humphrey, W. R.....Stillwater
Josewski, R. J.....Stillwater
Kalinoff, D.....Stillwater
Landeen, F. G.....Stillwater
Poirier, J. A.....Forest Lake
Rygh, E. A.....Stillwater
Sherman, Carnot H.....Bayport
Stuhr, J. W.....Stillwater
Thompson, V. C.....Marine

WATONWAN COUNTY MEDICAL SOCIETY

Regular meetings, on call.
Annual meeting, December.

President
Bregel, Fred L.....St. James
Secretary
Grimes, H. B.....Madelia

Bregel, Fred L.....St. James
Grimes, H. B.....Madelia
Hagen, O. E.....Butterfield
Hefke, Hans W.....St. James
McCarthy, W. J.....Madelia
Thompson, Albert.....St. James

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Traverse, Pope, and Stevens Counties.
Regular meetings, February, June, October, December.
Annual meeting, December.

President
Ewing, C. F.....Wheaton
Secretary
Linde, Herman.....Cyrus

Arnson, J. M.....Graceville
Bates, B. V.....Browns Valley
Bergan, Otto.....Clinton
Bolsta, Chas.....Ortonville
Karn, B. R.....Ortonville
Leland, John T.....Herman
Caine, C. E.....Morris
Christenson, C. R.....Starbuck
Cumming, J. F.....Chokio
Eberlin, E. A.....Glenwood
Elsey, J. R.....Glenwood
Ewing, C. F.....Wheaton
Fitzgerald, E. T.....Morris
Gibbon, L. L.....Lowry
Judge, Walter T.....Graceville
Leuty, Amos.....Morris
Lindberg, A. L.....Wheaton
Linde, Herman.....Cyrus
O'Donnell, D. M.....Ortonville
Oliver, C. I.....Graceville
Opheim, O. V.....Starbuck
Pierson, Claude M.....Wheaton
Ransom, M. L.....Hancock
Shelver, H. J.....Ortonville
Weir, J. D.....Beardsley

WINONA COUNTY MEDICAL SOCIETY

Regular meetings, first Monday in January, April, July, and September.
Annual meeting, first Monday in January.

President
Neumann, C. A.....Lewiston
Secretary
Steiner, I. W.....Winona

Adler, Stuart W.....Winona
Bear, H. C.....St. Charles
Benoit, F. T.....Winona
Nauth, W. W.....Winona
Clay, F. H.....St. Charles
Heise, W. F. C.....Winona
Keyes, E. D.....Winona
Leicht, O.....Winona
Lichtenstein, H.....Winona
Lindsay, W. V.....Winona
McDonnell, C. H.....Winona
McLaughlin, E. M.....Winona
Neumann, C. A.....Lewiston
Pritchard, D. B.....Winona
Risser, E. D.....Winona
Robbins, C. P.....Winona
Schaefer, S.....Winona
Schnarrenberger, G.....Rollingstone
Steiner, I. W.....Winona
Tweedy, G. J.....Winona
Walker, G. H.....Winona

WRIGHT COUNTY MEDICAL SOCIETY

Regular meetings, quarterly.
Annual meeting, October.

President
Moffat, A. G.....Howard Lake
Secretary
Catlin, John J.....Buffalo

Catlin, John J.....Buffalo
Ellison, Frank E.....Monticello
Freed, O. J. R.....Cokato
Harriman, L.....Howard Lake
Klaveness, E.....Monticello
Moffat, A. G.....Howard Lake
Norris, G. H.....Annandale
Peterson, O. L.....Cokato
Phillips, A. E.....Delano
Ridgway, A. M.....Annandale
Roholt, C. L.....Waverly
Rousseau, Victor.....Maple Lake
Shrader, E. E.....Watertown
Sturges, C. J.....Buffalo
Swezey, B. F.....Buffalo
Thoresen, Thor.....Brooklyn, N. Y.

ALPHABETICAL ROSTER

Aanes, A. M. ..... Red Wing
Abbott, J. S. ..... St. Paul
Abbott, Wm. P. ..... Duluth
Abramovich, J. H. ..... St. Paul
Adair, F. L. ..... Minneapolis
Adams, B. S. ..... Hibbing
Adams, J. L. ..... Morgan
Adams, L. P. ..... St. Cloud
Adams, R. C. ..... Bird Island
Adams, Rollin T. ..... Mantorville
Adams, S. Franklin ..... Rochester
Adkins, C. M. ..... Grygla
Adler, Stuart W. ..... Winona
Adson, A. W. ..... Rochester
Affeldt, Daniel E. ..... Kasson
Agnew, Allen T. ..... International Falls
Ahrens, A. E. ..... St. Paul
Ahrens, A. H. ..... St. Paul
Aitkens, H. B. ..... LeSueur Center
Akester, Ward ..... Marshall
Alberts, Max W. ..... St. Paul
Alden, J. F. ..... St. Paul
Aldes, Harry ..... St. Paul
Aldrich, F. H. ..... Belview
Alexander, Clifford E. ..... Duluth
Alexander, F. H. ..... St. Paul
Aling, C. P. ..... Minneapolis
Allen, A. W. ..... Austin
Allen, Chas. C. ..... Austin
Allen, Edgar V. ..... Rochester
Allen, F. A. ..... Crosby
Allen, F. H. ..... Staples
Allen, H. W. ..... Minneapolis
Allen, Mason ..... St. Paul
Allen, Roy W. ..... Rochester
Allen, W. A. ..... Rochester
Allison, R. G. ..... Minneapolis
Almquist, H. E. ..... Minneapolis
Altnow, Hugo O. ..... Minneapolis
Alvarez, Walter C. ..... Rochester
Amberg, Samuel ..... Rochester
Anderson, A. E. ..... Minneapolis
Anderson, Arnold S. ..... Wabasha
Anderson, Arnt G. ..... Minneapolis
Anderson, C. E. ..... Brainerd
Anderson, C. M. ..... Rochester
Anderson, David D. ..... Minneapolis
Anderson, E. W. ..... Rochester
Anderson, Edward D. ..... Minneapolis
Anderson, Ernest R. ..... Minneapolis
Anderson, Frank J. ..... Minneapolis
Anderson, Gilbert C. ..... Rochester
Anderson, Hilding C. ..... Duluth
Anderson, J. K. ..... Crookston
Anderson, J. V. ..... Red Wing
Anderson, Mark J. ..... Rochester
Anderson, Norman E. ..... Harmony
Anderson, S. H. ..... Red Wing
Anderson, Silas C. ..... Minneapolis
Anderson, W. S. ..... Minneapolis
Andrews, J. W. ..... Mankato
Andrews, R. N. ..... Mankato
Annis, H. B. ..... Minneapolis
Arey, H. C. ..... Excelsior
Arminen, K. V. ..... Duluth
Armstrong, E. I. ..... Duluth
Armstrong, J. M. ..... St. Paul
Arnold, E. W. ..... Adrian
Arnold, James E. ..... Mapleton
Arnquist, A. S. ..... St. Paul
Arnson, J. M. ..... Graceville
Arouni, Khalil ..... St. Paul
Arvidson, C. G. ..... Minneapolis
Arzt, C. P. ..... St. Paul
Asbury, J. T. ..... Rochester
Athens, A. G. ..... Duluth
Atkins, G. L. ..... Jackson
Aune, Martin ..... Minneapolis
Aurand, W. H. ..... Minneapolis
Aurelius, J. Richards ..... Rochester
Aurness, P. A. ..... Minneapolis
Avery, J. Fowler ..... Minneapolis
Axilrod, D. L. ..... Hutchinson
Aylmer, A. L. ..... Minneapolis
Ayres, G. T. ..... Ely

Babcock, F. M. ..... Northfield
Backe, Edmund ..... Kenyon
Bacon, Donald K. ..... St. Paul
Bacon, Knox ..... San Diego, Calif.
Bacon, L. C. ..... St. Paul
Bacon, R. S. ..... Montevideo
Badeaux, G. I. ..... Brainerd
Bagley, W. R. ..... Duluth
Bailey, H. B. ..... Ceylon
Baken, Melvin P. ..... Minneapolis
Baker, A. C. ..... Fergus Falls
Baker, Alfred T. ..... Minneapolis
Baker, E. L. ..... Minneapolis
Baker, Looe ..... Minneapolis
Bakke, O. H. ..... Minneapolis
Bakkila, Henry ..... Duluth
Balcome, F. E. ..... St. Paul
Balfour, D. C. ..... Rochester
Ball, C. R. ..... St. Paul
Bannick, Edwin G. ..... Rochester
Barborka, C. J. ..... Rochester
Bardon, Richard ..... Duluth
Bargen, J. Arnold ..... Rochester
Barker, Nelson W. ..... Rochester
Barnes, A. R. ..... Rochester
Barney, L. A. ..... Duluth
Barron, Moses ..... Minneapolis
Barry, L. W. ..... St. Paul
Barsness, Nellie ..... St. Paul
Barton, E. R. ..... Minneapolis
Basinger, H. P. ..... Windom
Basinger, Harvey R. ..... Mountain Lake
Baskett, George T. ..... Retreat, Pa.
Baskett, Olive T. ..... Retreat, Pa.
Bass, G. W. ..... Minneapolis
Bates, B. V. ..... Browns Valley
Baumgartner, Conrad J. ..... Rochester
Baxter, Geoffrey H. ..... Rochester
Baxter, S. H. ..... Minneapolis
Bayha, Carl H. ..... Rochester
Bayley, E. H. ..... Lake City
Beach, Watson ..... Rochester
Beadie, W. D. ..... Cannon Falls
Beals, Hugh ..... St. Paul
Bear, H. C. ..... St. Charles
Beard, Archie H. ..... Minneapolis
Beard, R. O. ..... Minneapolis
Bedford, E. W. ..... Minneapolis
Beise, R. A. ..... Brainerd
Bell, C. C. ..... St. Paul
Bell, E. T. ..... Minneapolis
Bell, J. W. ..... Minneapolis
Belote, G. B. ..... Caledonia
Benedict, E. E. ..... Minneapolis
Benedict, W. L. ..... Rochester
Benepe, L. M. ..... St. Paul
Benham, E. W. ..... Mankato
Benjamin, A. E. ..... Minneapolis
Benjamin, W. G. ..... Pipestone
Benn, F. G. ..... Minneapolis
Bennion, P. H. ..... St. Paul
Benoit, F. T. ..... Winona
Bentley, Norman P. ..... St. Paul
Berdez, G. L. ..... Duluth
Bergan, Otto ..... Clinton
Bergen, Ralph D. ..... Rochester
Bergh, L. N. ..... Montevideo
Bergheim, M. C. ..... Hawley
Bergman, O. B. ..... Janesville
Bergquist, K. E. ..... Duluth
Berkman, C. M. ..... Rochester
Bernard, B. C. ..... Thief River Falls
Berrisford, Paul D. ..... St. Paul
Bertelson, O. L. ..... Crookston
Bessesen, A. N., Sr. ..... Minneapolis
Bessesen, Al. N., Jr. ..... Minneapolis
Bessesen, Daniel H. ..... Minneapolis
Bessesen, W. A. ..... Minneapolis
Best, F. E. ..... Wells
Bianco, A. J. ..... Duluth
Biedermann, Jacob ..... Thief River Falls
Bigelow, C. E. ..... Dodge Center
Binet, H. E. ..... Grand Rapids
Binger, H. E. ..... St. Paul
Birnberg, T. L. ..... St. Paul
Bishop, Chas. W. ..... Minneapolis
Bissell, F. S. ..... Minneapolis
Bjorgo, C. W. ..... Cannon Falls
Black, Wm. ..... Mankato
Blackford, Launcelot M. ..... Rochester
Blacklock, S. S. ..... Hibbing
Blake, Jas. ..... Hopkins
Blakely, C. C. ..... Barnum
Blakey, A. R. ..... Stillwater
Blanchard, H. G. ..... Waseca
Blanton, Smiley ..... Minneapolis
Blaustone, Henry H. ..... Minneapolis
Blegen, H. M. ..... Warren
Bliss, John H. ..... Rochester
Block, Phoebe P. ..... Virginia
Blumenthal, Jacob ..... Minneapolis
Bock, R. A. ..... St. Paul
Bockman, M. W. H. ..... Minneapolis
Bodine, Marc W. ..... Rochester
Boeckmann, Eduard ..... St. Paul
Boeckmann, Egil ..... St. Paul
Boehm, J. C. ..... St. Cloud
Bofenkamp, F. W. ..... Luverne
Bohland, E. H. ..... St. Paul
Bohling, B. S. ..... Sandstone
Bole, R. S. ..... St. Paul
Boleyn, E. S. ..... Stillwater
Bolsta, Chas. ..... Ortonville
Bolstad, H. C. ..... St. Paul
Boman, P. G. ..... Duluth
Bomberger, C. B. ..... Mapleton
Bong, J. H. ..... Jasper
Bonta, M. B. ..... Rochester
Booth, A. E. ..... Minneapolis
Boothby, W. M. ..... Rochester
Boquist, E. T. W. ..... Minneapolis
Boquist, Harold S. ..... Minneapolis
Boreen, C. A. ..... Minneapolis
Borg, Joseph F. ..... St. Paul
Borgeson, Egbert J. ..... St. Paul
Borreson, Baldwin ..... Remer
Bossert, C. S. ..... Mora
Bossingham, O. N. ..... Lake Benton
Bottolfson, T. F. ..... Moorhead
Bouma, L. R. ..... St. Paul
Bouman, H. A. ..... Minneapolis
Bowen, Robert L. ..... Hibbing
Bowers, H. E. ..... Lake City
Bowers, J. T. ..... Thief River Falls
Bowing, H. H. ..... Rochester
Bowles, John H. ..... Rochester
Boyer, S. H. ..... Duluth
Boynton, Ruth ..... Minneapolis
Boysen, H. ..... Welcome
Boysen, Peter ..... Pelican Rapids
Braasch, Wm. F. ..... Rochester
Brabec, F. J. ..... Perham
Bracken, H. M. ..... Claremont, Cal.
Brading, Edward T. ..... Rochester
Bradley, E. L. ..... Superior, Wis.
Brand, G. D. ..... St. Paul
Brand, W. A. ..... Redwood Falls
Branham, D. S. ..... Albert Lea
Branton, A. F. ..... Willmar
Branton, B. J. ..... Willmar
Bratrud, O. Edward ..... Warren
Bratrud, Theodor ..... Warren
Bratrude, E. J. ..... Rochester
Bray, C. W. ..... Biwabik
Bray, E. R. ..... St. Paul
Bregel, Fred L. ..... St. James
Briggs, F. W. ..... Duluth
Brigham, C. F. ..... St. Cloud
Brigham, Frank ..... Watkins
Brimhall, J. B. ..... St. Paul
Brockbank, Thos. Wm. ..... Rochester
Broders, A. C. ..... Rochester
Brodie, Walter D. ..... St. Paul
Broker, W. S. ..... Battle Lake
Brooks, Chas. N. ..... Minneapolis
Brooks, D. F. ..... St. Paul
Brooks, G. F. ..... St. Paul
Brown, A. E. ..... Rochester
Brown, A. H. ..... Pipestone
Brown, Edgar D. ..... Minneapolis
Brown, Ed I. ..... St. Paul
Brown, Felix M. ..... Rochester
Brown, G. E. ..... Rochester
Brown, John C. ..... St. Paul
Brown, Lyle L. ..... Crookston
Brown, P. W. ..... Rochester
Brown, R. S. ..... Minneapolis
Brown, S. E. ..... St. Paul
Browning, W. E. ..... Caledonia
Brunet, L. M. ..... Cloquet
Buck, Fred H. ..... Shakopee
Bueerman, Winifred H. ..... Rochester
Buie, L. A. ..... Rochester
Bulkley, Kenneth ..... Minneapolis
Bullen, F. W. ..... Hibbing
Bumpus, H. C. ..... Rochester
Burch, F. E. ..... St. Paul
Burfield, G. H. ..... St. Paul
Burling, Temple ..... Minneapolis
Burnap, W. L. ..... Fergus Falls
Burns, F. W. ..... St. Paul
Burns, H. D. ..... Albert Lea
Burns, M. A. ..... Milan
Burns, R. L. ..... Two Harbors
Burns, R. M. ..... St. Paul

Busby, James L. Rochester
Buscher, Julius Albany
Busher, H. St. Paul
Butler, John Minneapolis
Button, A. J. Greenbush
Butturff, C. R. Freeborn
Butz, J. A. Monterey
Byrnes, W. J. Minneapolis

Cabot, George S. Minneapolis
Cabot, V. S. Minneapolis
Cady, L. H. Minneapolis
Caine, A. T. Anoka
Caine, C. E. Morris
Caldwell, Jas. P. St. Paul
Caldwell, Kenneth S. St. Paul
Caley, G. R. Princeton
Calhoun, F. W. Albert Lea
Callahan, F. F. Pokegama
Cameron, J. A. St. Paul
Camp, W. E. Minneapolis
Campbell, J. E. South St. Paul
Campbell, L. M. Minneapolis
Campbell, Robert Minneapolis
Cannon, Harry St. Paul
Carlaw, C. M. Minneapolis
Carlson, H. A. Brainerd
Carman, C. L. St. Paul
Carman, Paul I. St. Paul
Carroll, Wm. C. St. Paul
Carstens, C. F. Hibbing
Carter, Fred G. St. Paul
Catlin, John J. Buffalo
Cavanaugh, J. O. St. Paul
Caylor, Harold D. Rochester
Chadbourn, A. G. Heron Lake
Chambers, Stanley O. Philadelphia, Pa.
Chambers, W. C. Blue Earth
Chapman, T. L. Duluth
Chatterton, C. C. St. Paul
Cheleen, S. J. Minneapolis
Cheney, E. L. Duluth
Cherry, Chas. H. Minneapolis
Chesley, A. J. Minneapolis
Chorest, J. C. R. Marshall
Christensen, E. P. Two Harbors
Christenson, C. R. Starbuck
Christiansen, A. St. Paul
Christianson, H. W. Wykoff
Christie, G. R. Long Prairie
Christie, R. L. Long Prairie
Christison, J. T. St. Paul
Chumley, Charles L. Rochester
Cirkler, A. A. Minneapolis
Clark, F. F. Duluth
Clark, H. B. St. Cloud
Clark, H. S. Minneapolis
Clay, E. M. Hutchinson
Clay, F. H. St. Charles
Claydon, L. E. Red Wing
Clement, J. B. Lester Prairie
Clement, T. G. Duluth
Clifford, F. F. West Concord
Cobb, S. G. St. Paul
Cobb, Willis F. Lyle
Cochrane, W. J. Lake City
Coffey, Jay R. Rochester
Colby, Woodard St. Paul
Cole, H. B. Redwood Falls
Cole, Wallace H. St. Paul
Coleman, F. B. Austin
Collie, H. G. St. Paul
Collins, A. N. Duluth
Collins, H. C. Duluth
Collins, J. S. Wabasha
Colvin, A. R. St. Paul
Combacker, L. C. Stillwater
Comfort, Mandred W. Rochester
Comstock, A. E. St. Paul
Condit, W. H. Minneapolis
Conley, Alva A. Cannon Falls
Conner, H. M. Rochester
Conner, Wm. H. St. Paul
Connor, C. E. St. Paul
Constans, Geo. M. St. Paul
Cook, Henry Wireman Minneapolis
Cook, Paul B. St. Paul
Cooney, H. C. Princeton
Cooperman, H. O. Minneapolis
Corbeille, Catherine Rochester
Corbett, J. Frank Minneapolis
Corrigan, J. E. Spooner
Cosgriff, J. A. North Mankato
Cosgrove, J. H. Duluth
Cosman, E. O. Minneapolis
Counseller, Virgil S. Rochester
Countryman, Roger S. St. Paul
Covell, W. W. St. Peter
Coventry, W. A. Duluth
Cowern, E. W. North St. Paul
Cowing, P. G. Evansville
Crafts, Leo M. Minneapolis
Craig, C. C. International Falls
Craig, Wm. McK. Rochester
Crandall, A. M. Madison
Crane, Wm. W., Jr. Rochester
Cranmer, Richard R. Minneapolis
Creighton, Ralph H. Minneapolis
Cremer, M. H. Red Wing
Crenshaw, J. L. Rochester
Cress, E. E. Boyd
Cress, P. J. Ellsworth
Crewe, J. E. Rochester
Critchfield, L. R. St. Paul
Crowl, V. C. Home Gardens, Cal.
Crume, Geo. P. Minneapolis
Crump, J. W. St. Paul
Culligan, J. M. St. Paul
Culver, Lucian G. Stillwater
Cumming, J. F. Chokio
Curtin, John F. Minneapolis
Cutts, G. A. C. Litchfield
Cutts, George Minneapolis

Dack, Lloyd G. St. Paul
Dady, Elmer E. Minneapolis
Dahl, Elmer O. Minneapolis
Dahl, G. A. Mankato
Dahl, John A. Minneapolis
Dahlstrom, A. W. Minneapolis
Daignault, Oscar Benson
Daniel, Donald H. Minneapolis
Daniels, H. A. Eveleth
Daniels, J. W. St. Peter
Danielson, K. A. Litchfield
Darling, J. B. St. Paul
Darrow, D. C. Moorhead
Dart, Leslie O. Minneapolis
Daugherty, E. B. St. Paul
Daugherty, L. E. St. Paul
Davis, Austin C. Rochester
Davis, B. F. Duluth
Davis, F. U. Faribault
Davis, F. W. Adams
Davis, Herbert St. Paul
Davis, H. S. Duluth
Davis, I. Grant Rushford
Davis, John D. Rochester
Davis, L. Thomas Wadena
Davis, Thayer C. Wadena
Davis, William St. Paul
Davison, P. C. Willmar
Dean, Arthur C. Crookston
DeBoer, Hermanus Edgerton
Decker, Walter J. Rochester
Dedolph, Karl St. Paul
Delmore, J. L. Roseau
Dempsey, D. P. Kellogg
Denman, A. V. Mankato
Derauf, B. I. St. Paul
Desjardins, Arthur U. Rochester
Devereaux, T. G. Wayzata
Dezell, Earl R. Minneapolis
Deziel, G. Minneapolis
Dickson, Thos. H., Jr. St. Paul
Diehl, Harold S. Minneapolis
Diessner, H. D. Minneapolis
Disen, C. F. Minneapolis
Ditmeier, L. M. Gerber Jasper
Dittman, Geo. C. St. Paul
Dixon, Claude F. Rochester
Dixon, Robert K. Rochester
Dobson, Herbert V. Rochester
Dodge, F. A. LeSueur
Dohm, A. J. St. Paul
Dolan, C. P. Worthington
Dolder, F. C. Eyota
Doms, H. C. Slayton
Doms, Wm. Woodstock
Donohue, P. F. St. Paul
Doolittle, L. E. Duluth
Dorge, Richard I. Minneapolis
Doxey, G. L. Minneapolis
Doyle, J. B. Rochester
Drake, Carl B. St. Paul
Drake, C. R. Minneapolis
Drake, F. A. Lanesboro
Dredge, H. P. Sandstone
Dreisbach, N. Minneapolis
Drenning, F. C. Duluth
Drips, D. G. Rochester
Drought, W. W. Fergus Falls
Dubbe, F. H. New Ulm
DuBois, J. A. Sauk Center
DuBois, J. F. Sauk Center
Dudley, J. H. Windom
Dulude, S. Dassel
Duncan, Henry Marietta
Dungay, Neil S. Northfield
Dunlap, E. H. Minneapolis
Dunlap, H. F. Rochester
Dunlop, Alex. Crookston
Dunn, Geo. R. Minneapolis
Dunn, Halbert L. Baltimore, Md.
Dunn, J. N. St. Paul
Dunn, Louis Minneapolis
Dunne, Gerald P. St. Paul
Dunsmoor, F. A. Minneapolis
Dutton, C. E. Minneapolis
Dworsky, Samuel D. Minneapolis

Earl, George A. St. Paul
Earl, Robert O. St. Paul
Eberlin, E. A. Glenwood
Eby, C. B. Spring Valley
Eckman, P. F. Duluth
Eckstein, A. W. Comfrey
Edlund, G. St. Paul
Edstrom, Henry Crookston
Edwards, Ralph T. Elysian
Egilsrud, Kristian Minneapolis
Ehrenberg, C. J. Minneapolis
Eirley, Clara S. Y. Mt. Pleasant, Ia.
Eisenman, W. G. Chisholm
Eisenstadt, David H. Minneapolis
Eitel, Geo. D. Minneapolis
Eitel, G. G. Minneapolis
Ekblad, J. W. Duluth
Eklund, E. J. Norwood
Eklund, Wm. J. Duluth
Elias, F. J. Duluth
Ellingson, A. R. Detroit Lakes
Ellison, David E. Minneapolis
Ellison, Frank E. Monticello
Elsey, J. R. Glenwood
Ely, O. S. South St. Paul
Emerson, E. C. St. Paul
Empie, W. M. Virginia
Endress, E. K. St. Paul
Engberg, E. J. St. Paul
Engelhart, P. C. Minneapolis
Engh, Sigfred Cottonwood
Eppard, R. M. Cloquet
Erb, F. A. Minneapolis
Erdmann, C. A. Minneapolis
Erickson, J. L. Twin Valley
Ericson, J. G. Minneapolis
Ericson, Swan Le Sueur
Ernest, G. C. St. Paul
Ertel, E. Q. Ellendale
Eshelby, E. C. St. Paul
Eskew, Don C. Rochester
Esser, John Perham
Estrem, C. O. Fergus Falls
Estrem, T. A. Hibbing
Etheredge, Shuler H. Rochester
Eusterman, G. B. Rochester
Evarts, Arrah B. Rochester
Everlof, J. L. Minneapolis
Ewens, H. B. Virginia
Ewing, C. F. Wheaton

Fahey, E. W. St. Paul
Fansler, W. A. Minneapolis
Farr, R. E. Minneapolis
Farrell, J. C. Arlington
Farrish, R. C. Sherburn
Faust, Louis S. Rochester
Fawcett, C. E. Stewartville
Feeney, John M. Minneapolis
Fehland, Harold R. Rochester
Ferguson, J. C. St. Paul
Ferreira, G. J. Aurora
Fesler, Harold H. St. Paul
Figi, F. A. Rochester
Fiksdal, M. J. Willmar
Fink, Walter H. Minneapolis
Finney, W. P., Jr. Rochester
Fisch, Herbert W. Austin
Fischer, G. Minneapolis
Fischer, H. P. Shakopee
Fischer, Mario McC. Duluth
Fischer, P. M. Shakopee
Fishback, Frederick C. Rochester
Fitzgerald, E. T. Morris
Fjeldstad, C. A. Minneapolis
Flagstad, A. E. St. Paul
Flancher, Leon H. Lake Park
Fleischbauer, D. S. Wabasha
Fleming, A. S. Minneapolis
Fleming, James Cloquet
Fleming, T. N. St. Cloud
Flinn, B. P. Redwood Falls
Flinn, T. E. Redwood Falls
Flocken, Chas. F. Minneapolis
Flom, A. O. Chisago City
Flores, O. T. Dodge Center
Flothow, Paul G. Rochester
Flower, W. Z. Minneapolis
Fogarty, Chas. W. St. Paul
Foley, F. E. B. St. Paul
Folken, F. G. Albert Lea
Forbes, R. S. Duluth
Ford, Burton C. Marshall
Ford, Frances A. Rochester
Forrest, C. G. Clearbrook
Fortin, Harry J. Rochester

Foshager, Henry T. ..... Clara City
Fowler, L. H. ..... Minneapolis
Fox, John M. ..... Minneapolis
Franchere, F. W. ..... Lake Crystal
Francis, David W. ..... Morristown
Franzen, H. G. ..... Minneapolis
Frederickson, Clyde H. ..... Rochester
Freeborn, J. A. ..... Fergus Falls
Freed, O. J. R. ..... Cokato
Freeman, C. D. ..... St. Paul
Freeman, G. H. ..... St. Peter
Freeman, J. P. ..... Albert Lea
Freeman, W. L. ..... St. Cloud
Freligh, W. P. ..... Albert Lea
French, H. S. ..... New London
Freymiller, E. F. ..... Markville
Fried, Louis A. ..... Fosston
Friedell, A. ..... Minneapolis
Friesleben, Wm. ..... Sauk Rapids
Fritsche, Albert ..... New Ulm
Fritsche, L. A. ..... New Ulm
Froelich, H. W. ..... Thief River Falls
Frost, E. H. ..... Willmar
Frudenfeld, H. H. ..... Minneapolis
Fuerste, Frederick ..... Proctor
Fugina, George R. ..... Mankato
Fulton, J. F. ..... St. Paul

Gaarde, F. W. ..... Rochester
Gager, E. C. ..... St. Paul
Gaines, E. C. ..... Buffalo Lake
Gamble, J. W. ..... Albert Lea
Gamble, P. M. ..... Albert Lea
Gamble, R. M. ..... Albert Lea
Gammell, J. H. ..... Minneapolis
Garand, J. H. ..... Dayton
Garbrecht, Arthur ..... St. Paul
Gardiner, D. G. ..... St. Paul
Gardner, Edwin L. ..... Minneapolis
Gardner, R. D. ..... Eveleth
Gardner, V. H. ..... Fairmont
Garlock, A. V. ..... Bemidji
Garlock, Dewitt H. ..... Bemidji
Gates, C. E. ..... Anoka
Gault, C. C. ..... Owatonna
Gauthier, W. L. ..... Virginia
Gay, James G. ..... Rochester
Geer, Everett K. ..... St. Paul
Gehlen, J. N. ..... St. Paul
Geissenger, John D. ..... St. Paul
Geist, Emil S. ..... Minneapolis
Geist, George A. ..... St. Paul
Gelz, J. J. ..... St. Cloud
Gerber, Milo P. ..... Brainerd
Germo, Chas. ..... Balaton
Ghent, C. Harry ..... St. Paul
Ghent, M. M. ..... St. Paul
Ghostley, Mary C. ..... International Falls
Gibbon, L. L. ..... Lowry
Giere, E. O. ..... St. Paul
Giessler, Paul W. ..... Minneapolis
Giffin, H. Z. ..... Rochester
Gilfillan, J. S. ..... St. Paul
Gilkinson, A. J. ..... Osakis
Gillespie, M. G. ..... Duluth
Gillespie, N. H. ..... Duluth
Gingold, Benjamin A. ..... Minneapolis
Ginsberg, Wm. ..... St. Paul
Giroux, A. A. ..... Duluth
Gleason, Notery A. ..... Rochester
Goeckerman, W. H. ..... Rochester
Goehrs, H. W. ..... St. Cloud
Goldberg, Isadore M. ..... Minneapolis
Golden, C. M. ..... Tyler
Goltz, E. V. ..... St. Paul
Goodheart, C. J. ..... Akely
Goodson, Catherine M. ..... Retreat, Pa.
Gorder, Arne C. ..... Rochester
Gordon, Geo. J. ..... Minneapolis
Gosin, D. F. ..... Minneapolis
Gosslee, G. L. ..... Moorhead
Gowan, L. R. ..... Duluth
Graham, David ..... Duluth
Graham, R. D. ..... Duluth
Graham, Robert ..... Duluth
Gratzek, Thos. ..... St. Paul
Grave, Floyd ..... Minneapolis
Grawn, F. A. ..... Duluth
Gray, F. D. ..... Marshall
Gray, Royal C. ..... Cook
Greeley, L. Q. ..... Duluth
Green, E. K. ..... Minneapolis
Green, George F. ..... Rochester
Greene, Carl H. ..... Rochester
Greene, Charles L. ..... St. Paul
Greene, Earle I. ..... Rochester
Greene, W. P. ..... Minneapolis
Greenlee, Daniel P. ..... Rochester
Greisheimer, Esther M. ..... Minneapolis
Griffin, P. J. ..... Fertile
Grimes, H. B. ..... Madelia
Grinnell, W. B. ..... Preston
Grise, W. B. ..... Austin
Groebbner, O. A. ..... Cold Spring
Ground, H. T. ..... Virginia
Gruenhagen, Arnold P. ..... St. Paul
Gullixson, A. ..... Albert Lea
Gunderson, Harley J. ..... Minneapolis
Gunderson, Nels A. ..... Minneapolis
Guyer, L. G. ..... St. Paul

Habein, Harold C. ..... Rochester
Haberman, E. ..... Osakis
Hacking, Frank H. ..... Minneapolis
Haessley, S. B. ..... Faribault
Hagaman, Geo. K. ..... St. Paul
Hagen, G. L. ..... Minneapolis
Hagen, H. O. ..... New Richland
Hagen, O. E. ..... Butterfield
Hagen, Olaf J. ..... Moorhead
Hager, Benjamin H. ..... Rochester
Haggard, G. D. ..... Minneapolis
Haines, J. H. ..... Stillwater
Haines, S. F. ..... Rochester
Haldeman, Keene O. ..... Rochester
Hall, Andrea E. ..... Virginia
Hall, A. R. ..... St. Paul
Hall, E. L. ..... Princeton
Hall, J. M. ..... Minneapolis
Hall, P. M. ..... Ah-Gwah-Ching
Hall, S. S. ..... Minneapolis
Hallberg, C. A. ..... Minneapolis
Hallenbeck, D. F. ..... Rochester
Halloran, Walter ..... Jackson
Halper, Philip ..... St. Paul
Hamel, Arnold L. ..... Minneapolis
Hamilton, A. S. ..... Minneapolis
Hamlin, George B. ..... Minneapolis
Hammermeister, Theodore F. ..... New Ulm
Hammes, E. M. ..... St. Paul
Hammond, A. J. ..... Minneapolis
Hammond, J. F. ..... St. Paul
Hamrick, Robert A. ..... Rochester
Hand, John R. ..... Rochester
Hand, W. R. ..... Elbow Lake
Hane, Richard L. ..... Rochester
Haney, C. L. ..... Duluth
Hanlon, Frank R. ..... Rochester
Hansen, Elmer H. ..... Minneapolis
Hansen, Erling ..... Minneapolis
Hansen, Olga S. ..... Minneapolis
Hanson, A. M. ..... Faribault
Hanson, H. J. ..... Minneapolis
Hanson, H. V. ..... Minneapolis
Hare, E. R. ..... Minneapolis
Hargis, Estes H. ..... Rochester
Harmon, G. E. ..... St. Paul
Harriman, L. ..... Howard Lake
Harrington, C. D. ..... Minneapolis
Harrington, Ethel R. ..... Rochester
Harrington, F. E. ..... Minneapolis
Harrington, S. W. ..... Rochester
Harris, C. N. ..... Chisholm
Harrison, E. E. ..... West Concord
Harshbarger, Isaac L. ..... Rochester
Hart, A. B. ..... Owatonna
Hart, Alfred B., Jr. ..... Owatonna
Hartley, E. C. ..... St. Paul
Hartman, H. R. ..... Rochester
Hartzell, Thos. B. ..... Minneapolis
Haskell, A. D. ..... Alexandria
Hassett, Roger G. ..... Bird Island
Hastings, D. R. ..... Minneapolis
Hatch, W. E. ..... Duluth
Hauge, M. M. ..... Clarkfield
Hauser, Emil D. ..... Rochester
Hauser, V. P. ..... St. Paul
Havens, Fred Z. ..... Rochester
Haverfield, Addie R. ..... Minneapolis
Hawkins, V. J. ..... St. Paul
Hawkinson, L. F. ..... Brainerd
Hayes, J. M. ..... Minneapolis
Hayes, M. F. ..... Nashwauk
Head, G. D. ..... Minneapolis
Heagerty, W. B. ..... Faribault
Healy, R. T. ..... Pierz
Hearn, Wm. O. ..... Minneapolis
Heath, A. C. ..... St. Paul
Hebeisen, M. B. ..... Carver
Heck, Frank J. ..... Rochester
Heck, Wm. W. ..... St. Paul
Hedback, A. E. ..... Minneapolis
Hedenstrom, F. G. ..... St. Paul
Hedenstrom, L. H. ..... Cambridge
Heetderks, D. R. ..... Rochester
Hefke, Hans W. ..... St. James
Hegge, C. A. ..... Austin
Hegge, O. H. ..... Austin
Heiberg, E. A. ..... Fergus Falls
Heim, Russell R. ..... Minneapolis
Heimark, J. H. ..... Moorhead
Heimark, O. E. ..... Duluth
Heise, W. F. C. ..... Winona
Helk, H. H. ..... Minneapolis
Helland, G. M. ..... Spring Grove
Helland, J. W. ..... Spring Grove
Helmholz, H. F. ..... Rochester
Hempstead, B. E. ..... Rochester
Hemstead, Werner ..... St. Cloud
Hench, Philip S. ..... Rochester
Henderson, A. J. ..... Kiester
Henderson, Earl F. ..... Rochester
Henderson, M. S. ..... Rochester
Hendrickson, J. F. ..... Minneapolis
Hengstler, W. H. ..... St. Paul
Henney, Wm. H. ..... McIntosh
Henriksen, H. G. ..... Elko
Henry, C. E. ..... Minneapolis
Henry, Myron O. ..... Minneapolis
Hensel, C. N. ..... St. Paul
Henslin, A. E. ..... Le Roy
Herbst, Wm. P. ..... Minneapolis
Herman, Arthur L. ..... Minneapolis
Hermanson, Peter E. ..... Ivanhoe
Herrmann, Edgar T. ..... St. Paul
Herrmann, S. F. ..... Rochester
Hertel, G. E. ..... Austin
Hesselgrave, S. S. ..... St. Paul
Heyerdale, O. C. ..... Rochester
Hiebert, J. P. ..... Minneapolis
Higbee, Paul A. ..... Minneapolis
Higgins, J. H. ..... Minneapolis
Hilbert, Eunice ..... Minneapolis
Hilger, A. W. ..... St. Paul
Hilger, D. D. ..... St. Paul
Hilger, J. M. ..... Iona
Hilger, L. A. ..... St. Paul
Hill, Eleanor J. ..... Minneapolis
Hill, Frederick E. ..... Duluth
Hirschboeck, F. J. ..... Duluth
Hirschfelder, A. D. ..... Minneapolis
Hirschfield, M. S. ..... Duluth
Hirshfield, F. R. ..... Minneapolis
Hitchings, W. S. ..... Lakefield
Hoaglund, A. W. ..... Minneapolis
Hobbs, C. A. ..... Minneapolis
Hochfilzer, J. J. ..... St. Paul
Hodapp, R. J. ..... Willmar
Hodge, S. V. ..... Minneapolis
Hodgson, H. H. ..... Crookston
Hoff, Alfred ..... St. Paul
Hoff, Peder A. ..... St. Paul
Hoffman, Max H. ..... St. Paul
Hoidale, A. D. ..... Tracy
Hoiland, A. S. ..... Minneapolis
Holbrook, J. S. ..... Mankato
Holcomb, J. T. ..... St. Paul
Holcomb, O. W. ..... St. Paul
Holdridge, Geo. ..... Foley
Holen, T. ..... Minneapolis
Holl, P. M. ..... Minneapolis
Hollands, W. H. ..... Fisher
Holloway, Jackson K. ..... Rochester
Holm, Geo. A. ..... Minneapolis
Holm, H. H. ..... Glencoe
Holm, P. F. ..... Wells
Holman, C. J. ..... Mankato
Holmberg, L. J. ..... Canby
Holmes, A. E. ..... Rush City
Holmes, W. B. ..... Ada
Holst, C. F. ..... Little Falls
Holst, J. B. ..... Little Falls
Holt, Wm. B. ..... Minneapolis
Holtan, Theodore ..... Waterville
Holte, H. ..... Crookston
Horton, Bayard T. ..... Rochester
Horwitz, Alec ..... Rochester
House, Z. E. ..... Cass Lake
Houston, C. A. ..... Park Rapids
Hovde, H. ..... Duluth
Hovde, Rolf ..... Winthrop
Howard, Merrill A. ..... St. Paul
Howard, M. I. ..... Mankato
Howard, W. S. ..... St. Paul
Howard, William H. ..... Minneapolis
Huenekens, E. J. ..... Minneapolis
Huffman, Lester D. ..... Rochester
Hufford, Alvin R. ..... Rochester
Hughes, Louis D. ..... Minneapolis
Hullsiek, H. E. ..... St. Paul
Hultkrans, Joel C. ..... St. Paul
Hultkrans, R. E. ..... Rush City
Humphrey, E. W. ..... Moorhead
Humphrey, W. R. ..... Stillwater
Hunt, F. N. ..... Fairmont
Hunt, H. E. ..... St. Paul
Hunt, R. C. ..... Fairmont
Hunt, V. C. ..... Rochester
Hunte, A. F. ..... Truman
Hursh, M. M. ..... Grand Rapids
Hutchinson, Chas. J. ..... Minneapolis
Huxley, F. R. ..... Faribault
Hynes, James ..... Minneapolis
Hynes, John E. ..... Minneapolis

Ide, A. W. ..... St. Paul
Ikeda, Kano ..... Minneapolis
Ingerson, C. A. ..... St. Paul
Irvine, H. G. ..... Minneapolis

Jackson, C. M. Minneapolis
Jacobs, Jno. C. Willmar
Jacobs, Minerd F. Rochester
Jacquot, G. L. Tyler
Jamieson, Earl Walnut Grove
Jennings, Mary H. Minneapolis
Jensen, Harry Minneapolis
Jensen, J. C. Hendricks
Jensen, Louis C. Minneapolis
Jensen, M. J. Minneapolis
Jensen, T. J. Duluth
Jenson, A. H. Hutchinson
Jepson, P. N. Boston, Mass.
Johnson, A. E. Minneapolis
Johnson, A. E. Red Wing
Johnson, A. Elof Minneapolis
Johnson, Asa M. St. Paul
Johnson, C. M. Dawson
Johnson, E. W. Bemidji
Johnson, Ellsworth Windom
Johnson, Hans Kerkhoven
Johnson, Hartland C. St. Paul
Johnson, H. M. Dawson
Johnson, H. P. Fairmont
Johnson, James A. Minneapolis
Johnson, Julius Minneapolis
Johnson, Nimrod A. Minneapolis
Johnson, O. F. St. Paul
Johnson, Odin J. Minneapolis
Johnson, R. A. Minneapolis
Johnson, Ray G. St. Paul
Johnson, Selmer M. Minneapolis
Johnson, T. H. St. Paul
Johnson, Walfred Sauk Center
Johnson, Walter R. Rochester
Jones, A. W. Red Wing
Jones, D. C. St. Paul
Jones, E. M. St. Paul
Jones, G. M. Minneapolis
Jones, H. T. Rochester
Jones, H. W. Minneapolis
Jones, Richard N. Richmond
Jones, Robert D. Rochester
Jones, W. A. Minneapolis
Jordan, Elverse M. Rochester
Jordan, Ferdinand M. Rochester
Josewich, Alexander Minneapolis
Josewski, R. J. Stillwater
Joyce, G. T. Rochester
Judd, E. S. Rochester
Judge, Walter T. Graceville
Juergens, H. M. Belle Plaine
Juliar, R. O. St. Clair

Kaasa, L. J. Albert Lea
Kadesky, David St. Paul
Kahala, Arthur Crookston
Kalinoff, D. Stillwater
Kamman, Gordon R. St. Paul
Kamp, B. A. Albert Lea
Kannary, E. L. St. Paul
Kanne, C. W. Faribault
Karn, B. R. Ortonville
Kaufman, A. J. Franklin
Kaufman, Wm. C. Appleton
Kean, N. D. Coleraine
Keith, N. M. Rochester
Kelling, Louis F. Lakefield
Kelly, B. W. Aitkin
Kelly, John V. St. Paul
Kelly, Paul H. St. Paul
Kelly, Thomas C. Mankato
Kelsey, C. G. Hinckley
Kemp, A. F. Mankato
Kennedy, C. C. Minneapolis
Kennedy, Jane F. Minneapolis
Kennedy, R. Roy Minneapolis
Kennedy, Roger L. J. Rochester
Kennedy, W. A. St. Paul
Kenny, H. F. St. Paul
Kenyon, Paul Wadena
Kepler, Edwin J. Rochester
Kepler, Helen M. Rochester
Kerlan, M. Moose Lake
Kerlan, S. Z. Aitkin
Kern, M. J. St. Cloud
Kernohan, James W. Rochester
Kestel, John L. Rochester
Kesting, Herman St. Paul
Keyes, C. R. Duluth
Keyes, E. D. Winona
Kibbe, O. A. Minneapolis
Kiefer, M. A. Sleepy Eye
Kierland, P. E. Alexandria
Kiesling, I. H. Nashwauk
Kilbourne, A. F. Rochester
Kilbride, J. S. Canby
Killins, Wendell A. Rochester
Kimball, H. H. Minneapolis
King, E. A. Minneapolis
King, George L. St. Paul
King, W. R. Minneapolis

King, W. S. Eveleth
King, Z. P. St. Paul
Kingsbury, E. M. Clearwater
Kinsella, Thomas J. Oak Park
Kirk, G. P. East Grand Forks
Kistler, A. S. St. Paul
Kistler, C. M. Minneapolis
Kittelson, Olaf Minneapolis
Kittelson, T. N. Fergus Falls
Kjelland, J. S. East Ellsworth, Wis.
Klaveness, E. Monticello
Klein, Harry Duluth
Klein, H. N. St. Paul
Kleinheksel, John L. Rochester
Klima, W. W. Stewart
Kliman, Frank E. Duluth
Knapp, F. N. Duluth
Knauff, M. K. St. Paul
Knight, H. L. Minneapolis
Knight, Ralph T. Minneapolis
Knight, Ray R. Minneapolis
Knudtson, H. M. Browerville
Kohlbry, C. O. Duluth
Kohler, D. W. St. Joseph
Kohler, F. G. Minneapolis
Kohler, G. A. Minneapolis
Koller, Herman M. Minneapolis
Koller, L. R. Minneapolis
Kolset, Carl D. Sanborn
Kooiker, Herman J. Albert Lea
Korth, Zeno N. Rochester
Kraft, Peter Duluth
Kremer, Walter J. Minneapolis
Kretzschmar, Karl E. Los Angeles, Cal.
Kriedt, Daniel Minneapolis
Kucera, Frank J. Hopkins
Kucera, Wm. J. Minneapolis
Kuhlman, Aug. Melrose
Kusske, A. L. New Ulm
Kuth, J. R. Duluth
Kvitrud, G. Minneapolis

Laird, A. T. Nopeming
Lajoie, John M. Minneapolis
Landeen, F. G. Stillwater
Laney, R. L. Puposky
Langenderfer, F. V. St. Paul
Langhoff, A. H. Glencoe
Lannin, J. C. Mabel
Lapierre, A. P. Minneapolis
Lapierre, C. A. Minneapolis
Lapp, Victor R. Rochester
Larsen, C. L. St. Paul
Larson, A. L. Fertile
Larson, M. L. St. Paul
Larson, O. O. Detroit Lakes
Latchford, James K. Rochester
Laughlin, J. T. Grey Eagle
Laurent, A. A. Minneapolis
LaVake, R. T. Minneapolis
Law, A. A. Minneapolis
Lax, Morris H. St. Paul
Leahy, Bartholomew St. Paul
Leavenworth, Richard O. St. Paul
Leavitt, H. H. Minneapolis
Lebowski, Joseph A. Minneapolis
Leck, Clifford C. Austin
LeClerc, J. E. Le Sueur
Leddy, Eugene T. Rochester
Lee, H. M. Minneapolis
Lee, W. A. Fergus Falls
Lee, W. P. Northfield
Lee, Walter N. Madison
Leebens, J. H. Lismore
Leibold, H. H. Parkers Prairie
Leicht, O. Winona
Leitch, Archibald St. Paul
Leitch, N. M. Hallock
Leland, John T. Herman
Leland, M. N. Minneapolis
Lemon, W. S. Rochester
Lemstrom, Jarl Minneapolis
Lenont, C. B. Virgina
Leonard, L. J. Minneapolis
Leopard, B. A. New Richland
Lepak, F. J. Duluth
Lepak, John A. St. Paul
Lerche, William St. Paul
Leuty, Amos Morris
Lewis, A. J. Henning
Lewis, C. B. St. Cloud
Lewis, Charles F. Austin
Lewis, J. B. South St. Paul
Lewis, W. W. St. Paul
Lexa, F. J. Lonsdale
Libert, John N. St. Cloud
Lichtenstein, H. Winona
Lick, C. Louis St. Paul
Liedloff, A. G. Mankato
Lillie, H. I. Rochester
Lillie, W. I. Rochester
Lima, Ludvig Montevideo

Lind, C. J. Minneapolis
Lindberg, A. L. Wheaton
Linde, Herman Cyrus
Lindgren, E. I. Duluth
Lindquist, R. H. Minneapolis
Lindsay, W. V. Winona
Lindsey, Maude L. Rochester
Linner, H. P. Minneapolis
Linton, W. B. Rochester
Lippman, Hyman S. Minneapolis
List, Walter E. Minneapolis
Litchfield, John T. Minneapolis
Litman, Samuel N. Duluth
Little, D. W. Appleton
Little, W. J. St. Paul
Litzenberg, J. C. Minneapolis
Lloyd, H. J. Mankato
Locken, O. E. Crookston
Logan, A. H. Rochester
Logan, F. W. Blue Earth
Logefeil, Rudolph C. Minneapolis
Lommen, P. A. Austin
Loofbourrow, Elias H. Keewatin
Loomis, E. A. Minneapolis
Love, Fred A. Carlos
Lowe, Earl R. South St. Paul
Lowe, Thos. Pipestone
Luden, Georgine Rochester
Luedtke, G. H. Fairmont
Lum, C. E. Duluth
Lund, Arthur E. St. Paul
Lundgren, A. C. Minneapolis
Lundholm, A. M. St. Paul
Lundy, John S. Rochester
Lyman, F. V. Grove City
Lynch, M. J. Minneapolis
Lyng, John A. Minneapolis
Lyon, E. P. Minneapolis
Lyon, J. D. Minneapolis
Lysne, Henry Minneapolis

McAdory, R. J. Minneapolis
McBeath, Ewing C. St. Paul
McBroom, D. E. Faribault
McCarthy, Donald Minneapolis
McCarthy, W. J. Madelia
McCarthy, W. R. St. Paul
McCartney, James S. Minneapolis
McCarty, P. D. Ely
McClanahan, J. H. White Bear Lake
McClanahan, T. S. White Bear Lake
McCloud, C. N. St. Paul
McComb, C. F. Duluth
McCoy, Mary Duluth
McCrea, James Fulda
McDaniel, Orianna Minneapolis
McDaniel, S. P. Mountain Iron
McDonald, A. L. Duluth
McDonell, C. H. Winona
McDowell, J. P. St. Cloud
McEachran, A. Minneapolis
McFarland, A. H. Minneapolis
McGandy, R. F. Minneapolis
McGeary, Geo. E. Minneapolis
McGiffert, E. N. Duluth
McGroarity, J. J. Easton
McGuigan, H. T. Red Wing
McHaffie, O. L. Duluth
McHugh, Roderick F. Aitkin
McIntire, H. M. Waseca
McIntyre, E. H. Virginia
McIntyre, Geo. Minneapolis
McIntyre, John A. Owatonna
McKaig, Carle B. Pine Island
McKeithen, A. M. Rochester
McKenna, J. K. Austin
McKeon, James St. Paul
McKeon, J. O. St. Paul
McKeown, E. G. Pipestone
McKibben, H. E. St. Cloud
McKinlay, C. A. Minneapolis
McKinley, J. C. Minneapolis
McKinney, F. S. Minneapolis
McKinnon, J. J. Wadena
McLaren, Jeanette M. St. Paul
McLaughlin, E. M. Winona
McMurtry, Walter C. Virginia
McNaugher, William McM. Rochester
McNevin, C. F. St. Paul
McNutt, John R. Two Harbors
McPheeters, H. O. Minneapolis
McQuiggan, Mark R. Rochester
McVicar, Chas. S. Rochester
MacDonald, A. E. Minneapolis
MacDonald, D. A. Minneapolis
MacDonald, Irving C. Minneapolis
MacRae, Gordon C. Duluth
Macbeth, J. L. St. Clair
Mach, Frank B. Minneapolis
Macnie, J. S. Minneapolis
Madden, John F. Gibbon
Maertz, W. F. New Prague

Magath, T. B. ..... Rochester
Magie, W. H. ..... Duluth
Magney, F. H. ..... Duluth
Mahwald, A. ..... Albany
Maland, C. O. ..... Minneapolis
Manley, J. R. ..... Duluth
Mann, A. T. ..... Minneapolis
Manson, F. M. ..... Worthington
Marcley, W. J. ..... Minneapolis
Marcum, E. H. ..... Bemidji
Mariette, Ernest ..... Oak Terrace
Mark, D. B. ..... Minneapolis
Marken, M. H. ..... Fairmont
Martin, Clement L. ..... Rochester
Martineau, J. L. ..... St. Paul
Masson, D. M. ..... Rochester
Masson, J. C. ..... Rochester
Matthews, Justus ..... Minneapolis
Mattill, P. M. ..... Oak Terrace
Maxeiner, Stanley R. ..... Minneapolis
May, James A. ..... Rochester
May, W. H. ..... Minneapolis
Mayland, M. L. ..... Faribault
Mayo, C. H. ..... Rochester
Mayo, W. J. ..... Rochester
Maytum, Charles K. ..... Rochester
Mead, Marion A. ..... Minneapolis
Meckstroth, C. W. ..... Brandon
Mee, P. H. ..... Osseo
Meierding, Wm. A. ..... New Ulm
Meilicke, W. A. ..... Nicollet
Meland, Ernest ..... Dalton
Melby, Benedik ..... Blooming Prairie
Mellby, O. F. ..... Thief River Falls
Melzer, G. R. ..... Lyle
Meng, Eleanor L. ..... Fergus Falls
Meng, Wm. L. ..... Fergus Falls
Merkert, Charles E. ..... Minneapolis
Merkert, G. L. ..... Minneapolis
Merriman, L. L. ..... Duluth
Mesker, G. H. ..... Olivia
Metcalf, F. W. ..... Fulda
Meyer, A. A. ..... Melrose
Meyer, E. L. ..... Minneapolis
Meyer, P. F. ..... Faribault
Meyerding, E. A. ..... St. Paul
Meyerding, H. W. ..... Rochester
Michael, J. C. ..... Minneapolis
Michelson, H. E. ..... Minneapolis
Milan, M. Geo. ..... Warren
Miller, F. C. ..... Minneapolis
Miller, H. A. ..... Waseca
Miller, V. I. ..... Mankato
Miller, W. A. ..... New York Mills
Mills, J. L. ..... Winnebago
Mills, Ralph G. ..... Rochester
Mitchell, A. B. ..... Hector
Mitchell, Frederick ..... St. Paul
Mitchell, R. S. ..... Grand Meadow
Moench, L. Mary ..... Rochester
Moersch, F. P. ..... Rochester
Moersch, H. J. ..... Rochester
Moffatt, A. G. ..... Howard Lake
Mogilner, S. N. ..... St. Paul
Moir, Wm. W. ..... Minneapolis
Molander, H. A. ..... St. Paul
Moloney, G. R. ..... Belle Plaine
Monahan, R. H. ..... Minneapolis
Montgomery, Hamilton ..... Rochester
Moore, A. B. ..... Rochester
Moorhead, M. B. ..... Minneapolis
Moquin, Marie A. ..... St. Paul
Morcom, H. W. ..... Duluth
More, C. W. ..... Eveleth
Moren, Edwin ..... Minneapolis
Mork, B. O. ..... Worthington
Morley, G. A. ..... Crookston
Morrison, A. W. ..... Minneapolis
Morrissey, F. B. ..... St. Paul
Morrow, James J. ..... Austin
Morse, M. P. ..... LeRoy
Morsman, L. W. ..... Hibbing
Morss, C. R. ..... Zumbrota
Mortenson, N. G. ..... St. Paul
Morton, Chas. B. ..... Rochester
Moses, Joseph, Jr. ..... Northfield
Moskovitz, Selic ..... St. Paul
Moss, Myer N. ..... St. Paul
Moyer, Ralph E. ..... Bemidji
Moynihan, A. F. ..... Sauk Center
Moynihan, T. J. ..... St. Paul
Muller, R. Theo. ..... St. Paul
Murphy, E. F. ..... St. Paul
Murphy, Ignatius ..... Minneapolis
Murray, D. D. ..... Duluth
Mussey, R. D. ..... Rochester
Myers, J. A. ..... Minneapolis
Myers, Thos. ..... St. Paul
Myre, C. R. ..... Paynesville

Naegeli, Frank ..... Fergus Falls
Nagel, G. W. ..... Rochester
Nagel, H. D. ..... Waconia
Nannestad, J. R. ..... Albert Lea
Nass, H. A. ..... Mabel
Nathanson, M. H. ..... Minneapolis
Nauth, W. W. ..... Winona
Neher, F. H. ..... St. Paul
Nelson, C. P. ..... Minneapolis
Nelson, E. H. ..... Chisholm
Nelson, Ernest J. ..... Owatonna
Nelson, H. E. ..... Crookston
Nelson, H. S. ..... Minneapolis
Nelson, L. A. ..... St. Paul
Nelson, Marque O. ..... Rochester
Nelson, M. S. ..... Granite Falls
Nelson, Nesmith ..... Brainerd
Nelson, O. E. ..... Minneapolis
Nelson, O. N. ..... Battle Lake
Nerad, Anton H. ..... Argyle
Nesbit, Harold T. ..... St. Paul
Neumann, C. A. ..... Lewiston
New, G. B. ..... Rochester
Newhart, Horace ..... Minneapolis
Nichols, A. E. ..... St. Paul
Nicholson, M. A. ..... Duluth
Nickel, Allen A. C. ..... Rochester
Nippert, H. T. ..... St. Paul
Nippert, L. A. ..... Minneapolis
Nomland, Ruben ..... Brainerd
Nootnagel, C. F. ..... Minneapolis
Noran, A. N. ..... Minneapolis
Nordin, C. G. ..... St. Paul
Nordin, G. T. ..... Minneapolis
Nordland, Martin ..... Minneapolis
Norman, J. F. ..... Crookston
Norrgard, H. T. ..... Milaca
Norris, Edgar H. ..... St. Paul
Norris, G. H. ..... Annandale
Norris, J. F. ..... St. Peter
Noth, H. W. ..... Minneapolis
Novak, E. E. ..... New Prague
Nunn, Leslie L. ..... Eveleth
Nye, Katherine A. ..... St. Paul
Nye, Lillian L. ..... St. Paul

O'Brien, H. J. ..... St. Paul
O'Connor, I. A. ..... St. Paul
O'Connor, J. P. ..... St. Paul
O'Connor, Patrick H. ..... Amboy
O'Donnell, D. M. ..... Ortonville
O'Donnell, J. E. ..... Minneapolis
O'Hara, J. J. ..... Janesville
O'Leary, P. A. ..... Rochester
Oberg, C. M. ..... Minneapolis
Ochsenhirt, Norman C. ..... Rochester
Oerting, Harry ..... St. Paul
Offutt, Susan R. ..... Rochester
Ogden, Warner ..... St. Paul
Ohage, Justus ..... St. Paul
Ohage, Justus, Jr. ..... St. Paul
Ohlinger, L. B. ..... Rochester
Ohnstad, J. L. ..... McIntosh
Oliver, C. I. ..... Graceville
Olson, Albert E. ..... Duluth
Olson, Chas. A. ..... St. Paul
Olson, Chester J. ..... Belle Plaine
Olson, Ernest A. ..... Pine Island
Olson, F. A. ..... Minneapolis
Olson, G. M. ..... Minneapolis
Olson, Olaf A. ..... Minneapolis
Olson, R. G. ..... Minneapolis
Olson, W. P. ..... Gaylord
Omohundro, Miles P. ..... Rochester
Onsgard, C. K. ..... Halstad
Onsgard, L. K. ..... Houston
Opheim, O. V. ..... Starbuck
Oppegaard, C. L. ..... Crookston
Oppegaard, M. O. ..... Crookston
Oredson, O. A. ..... Duluth
Orlob, W. M. ..... Renville
Ortman, John W. ..... Pierz
Osborn, Lida ..... Mankato
Osburn, B. F. ..... International Falls
Ostergren, E. W. ..... St. Paul
Otto, H. C. ..... Frazee
Overend, K. V. ..... Hallock
Owre, Oscar ..... Minneapolis

Pake, S. G. ..... Duluth
Palmer, C. F. ..... Albert Lea
Palmer, R. N. ..... Lanesboro
Palmer, W. L. ..... Albert Lea
Pardee, Katherine ..... Northampton, Mass.
Parker, H. L. ..... Rochester
Parker, J. William ..... Rochester
Parker, O. W. ..... Ely
Parks, A. H. ..... Minneapolis
Parson, L. R. ..... Elbow Lake
Parsons, Eloise ..... Rochester
Passer, A. A. ..... Olivia
Patterson, W. E. ..... Minneapolis
Patterson, W. E. ..... Westbrook
Patterson, W. L. ..... Fergus Falls
Paul, L. W. ..... Canby
Paulsen, E. L. ..... Minneapolis
Paulson, C. W. ..... North Branch
Paulson, G. A. ..... Duluth
Paulson, T. S. ..... Fergus Falls
Payette, C. H. ..... Duluth
Pearce, N. O. ..... Minneapolis
Pearson, F. R. ..... St. Paul
Pearson, William T. ..... Russell
Pedersen, A. H. ..... St. Paul
Pederson, Harold ..... Minneapolis
Pederson, O. J. ..... Hanska
Pederson, R. M. ..... Minneapolis
Pemberton, J. deJ. ..... Rochester
Pengelly, E. J. ..... Crosby
Penhall, F. W. ..... Morton
Pennie, D. F. ..... Duluth
Penny, L. E. ..... St. Paul
Peppard, T. A. ..... Minneapolis
Perley, A. E. ..... Chisholm
Perry, C. G. ..... St. Paul
Perry, Ralph St. J. ..... Minneapolis
Persons, C. E. ..... Marshall
Peters, R. M. ..... Minneapolis
Petersen, J. R. ..... Minneapolis
Petersen, Thorvald ..... Minneapolis
Peterson, Alfred ..... Dassel
Peterson, A. A. ..... Mora
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Peterson, Edward ..... Buhl
Peterson, H. E. ..... Granite Falls
Peterson, O. H. ..... Minneapolis
Peterson, O. L. ..... Cokato
Peterson, R. A. ..... Vesta
Peterson, V. N. ..... St. Paul
Peterson, Willard C. ..... Minneapolis
Pettit, C. W. ..... Minneapolis
Pfaff, E. K. ..... Shoals, Indiana
Phelps, Alvah G. ..... Ogilvie
Phelps, Kenneth A. ..... Minneapolis
Phillips, A. E. ..... Delano
Phillips, W. H. ..... Jordan
Pierce, Chas. H. ..... Wadena
Pierson, Claude M. ..... Wheaton
Piper, M. C. ..... Rochester
Piper, Wm. A. ..... Mountain Lake
Plankers, A. G. ..... Dubuque, Iowa
Platou, E. S. ..... Minneapolis
Plondke, F. J. ..... St. Paul
Plonske, C. J. ..... Faribault
Plummer, H. S. ..... Rochester
Plummer, W. A. ..... Rochester
Poehler, F. T. ..... Minneapolis
Poirier, J. A. ..... Forest Lake
Pollock, L. W. ..... Rochester
Polzak, Jacob A. ..... Minneapolis
Poppe, Fred H. ..... Minneapolis
Power, J. E. ..... Duluth
Powers, F. W. ..... Barrett
Prangen, A. D. ..... Rochester
Pratt, Fred J. ..... Minneapolis
Pratt, J. A. ..... Minneapolis
Preine, I. A. ..... Minneapolis
Prendergast, H. J. ..... St. Paul
Prickman, Louis E. ..... Rochester
Prim, J. A. ..... Minneapolis
Pritchard, D. B. ..... Winona
Proshek, Charles E. ..... Minneapolis
Puffer, F. L. ..... Bird Island
Pugliese, Frank M. ..... Rochester

Quale, Victor S. ..... Rochester
Quigley, T. C. ..... Owatonna
Quinby, Thomas F. ..... Minneapolis
Quist, H. W. ..... Minneapolis

Raadquist, C. S. ..... Hibbing
Radabaugh, R. C. ..... Hastings
Radtke, H. P. ..... Rochester
Raihala, John ..... Virginia
Rains, J. M. ..... Willmar
Raiter, Franklin W. S. ..... Cloquet
Raiter, Roy F. ..... Cloquet
Ramsey, W. R. ..... St. Paul
Randall, Lawrence M. ..... Rochester
Rankin, F. W. ..... Rochester
Ransom, M. L. ..... Hancock
Ratcliffe, J. J. ..... Aitkin
Rathbun, C. A. ..... St. Cloud
Rebman, E. C. ..... Austin
Reddick, Charles E. ..... Rochester
Reed, Chas. A. ..... Minneapolis
Rees, S. P. ..... Minneapolis
Reeves, C. E. ..... Eagle Bend
Regnier, E. A. ..... Minneapolis
Reid, J. Spence ..... Rochester
Reineke, George F. ..... New Ulm
Reiter, H. W. ..... Shakopee
Rentschler, Calvin B. ..... Rochester
Rentschler, Edwin B. ..... Rochester

Replogle, W. H. ..... Wabasha
Reynolds, Hugh ..... Hibbing
Reynolds, J. S. ..... Minneapolis
Rhines, D. C. ..... Caledonia
Richards, E. T. F. ..... St. Paul
Richards, W. B. ..... St. Cloud
Richardson, Fred S. ..... Belgrade
Richardson, Harold E. ..... St. Paul
Richdorf, L. F. ..... Minneapolis
Ridgeway, Alexander ..... Elrosa
Ridgway, A. M. ..... Annandale
Riggs, C. E. ..... St. Paul
Rimer, E. W. ..... Breckenridge
Rishmiller, J. H. ..... Minneapolis
Risser, E. D. ..... Winona
Ritchie, H. P. ..... St. Paul
Rivers, A. B. ..... Rochester
Rizer, R. I. ..... Minneapolis
Roadman, I. M. ..... Ponsford
Roan, Carl M. ..... Minneapolis
Robb, Edwin F. ..... Minneapolis
Robbins, C. P. ..... Winona
Roberts, L. M. ..... Little Falls
Roberts, Thos. S. ..... Minneapolis
Roberts, W. B. ..... Minneapolis
Robertson, A. W. ..... Litchfield
Robertson, H. E. ..... Rochester
Robertson, J. B. ..... Cottonwood
Robertson, P. A. ..... Austin
Robertson, W. P. ..... Litchfield
Robilliard, C. M. ..... Faribault
Robilliard, W. H. ..... Faribault
Robinson, J. M. ..... Duluth
Robitshek, E. C. ..... Minneapolis
Rochford, W. E. ..... Minneapolis
Rodda, F. C. ..... Minneapolis
Rodgers, C. L. ..... Minneapolis
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Rood, D. C. ..... Duluth
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Rosenwald, R. M. ..... Minneapolis
Rothenburg, J. C. ..... Springfield
Rothrock, J. L. ..... St. Paul
Rothschild, H. J. ..... St. Paul
Rousseau, Victor ..... Maple Lake
Rowe, O. W. ..... Duluth
Rowe, Paul H. ..... Minneapolis
Rowe, W. H. ..... Minneapolis
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Roy, J. A. ..... Red Lake Falls
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Rucker, Charles W. ..... Rochester
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Rumpf, C. W. ..... Faribault
Rumpf, W. H. ..... Faribault
Rutherford, W. C. ..... St. Paul
Rutledge, L. H. ..... Detroit Lakes
Ryan, John J. ..... St. Paul
Ryan, Mark E. ..... St. Paul
Ryan, W. J. ..... Duluth
Rygh, E. A. ..... Stillwater

St. Clair, G. G. ..... Duluth
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Sager, William W. ..... Rochester
Sahr, W. G. ..... Hutchinson
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Sanderson, A. G. ..... Grante Falls
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Selleseth, Iver ..... Minneapolis
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Senn, E. W. ..... Owatonna
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Shelver, H. J. ..... Ortonville
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Sherman, H. T. ..... Franklin
Sherping, O. Th. ..... Fergus Falls
Sherwood, G. E. ..... Kimball
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Silvernail, F. ..... Elmore
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Simon, Harold E. ..... Rochester
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Smersh, J. F. ..... Owatonna
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Smith, Homer R. ..... Minneapolis
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Smith, M. W. ..... Red Wing
Smith, Newton D. ..... Rochester
Smith, Norman M. ..... Minneapolis
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Sogge, L. ..... Windom
Sohlberg, Olof ..... St. Paul
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Spicer, F. W. ..... Duluth
Sprafka, J. M. ..... St. Paul
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Stacy, L. J. ..... Rochester
Stangl, Fred ..... St. Cloud
Stangl, P. E. ..... St. Cloud
Stark, W. B. ..... Rochester
Steffens, L. A. ..... Red Wing
Steiner, I. W. ..... Winona
Stemsrud, A. A. ..... Dawson
Stephan, E. L. ..... Hinckley
Stephens, Brooks P. ..... Rochester
Stephenson, Robert A. ..... Rochester
Sterner, E. G. ..... St. Paul
Sterner, O. W. ..... St. Paul
Steven, Geo. ..... Bryon
Stevens, F. A. ..... Lake Elmo
Stevenson, Frank W. ..... Minneapolis
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Stewart, Alexander ..... St. Paul
Stewart, C. A. ..... Minneapolis
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Stolpestad, H. L. ..... St. Paul
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Strathern, F. P. ..... St. Peter
Stratte, A. K. ..... Pine City
Stratte, Harold C. ..... Lancaster
Stratte, J. J. ..... Hallock
Strickler, A. F. ..... Sleepy Eye
Strobel, W. G. ..... Duluth
Strout, E. S. ..... Minneapolis
Strout, G. Elmer ..... Minneapolis
Stuart, A. B. ..... Cloquet
Stuhler, Louis G. ..... Rochester
Stuhr, J. W. ..... Stillwater
Sturges, C. J. ..... Buffalo
Sturre, J. R. ..... Minneapolis
Stuurmans, S. H. ..... Erskine
Sukeforth, L. A. ..... Duluth
Sundberg, R. H. ..... Pokegama
Sundt, M. ..... Minneapolis
Sutherland, C. G. ..... Rochester
Sutherland, H. N. ..... Ely
Sutton, Chas. S. ..... St. Cloud
Sutton, L. F. ..... Mazeppa
Swan, Theo. S. ..... Rochester
Swanson, Edwin O. ..... St. Paul
Swanson, John A. ..... St. Paul
Swanson, Roy E. ..... Minneapolis
Swartwood, F. A. ..... Waseca
Swedenberg, A. W. ..... Thief River Falls
Sweeney, Arthur ..... St. Paul
Sweetman, R. H. ..... Sauk Center
Sweetser, H. B., Sr. ..... Minneapolis
Sweetser, H. B., Jr. ..... Minneapolis
Sweetser, Theodore ..... Minneapolis
Sweitzer, S. E. ..... Minneapolis
Swendson, J. J. ..... St. Paul
Swennes, O. S. ..... Wahkon
Swenson, Arnold O. ..... Duluth
Swenson, Charles ..... Braham
Swenson, O. J. ..... Waseca
Swenson, Paul C. ..... Duluth
Swezey, B. F. ..... Buffalo
Sybilrud, H. W. ..... Bricelyn
Synhorst, Alfred P. ..... Rochester

Taft, John O. ..... Minneapolis
Taft, Walter L. ..... Minneapolis
Tangen, Geo. M. ..... Canby
Tanner, A. C. ..... Minneapolis
Tanquist, E. J. ..... Alexandria
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Taylor, H. L. ..... St. Paul
Taylor, Rood ..... Minneapolis
Taylor, Wm. J. ..... Pipestone
Teisberg, C. B. ..... St. Paul
Tennyson, Theo. ..... Minneapolis
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Thabes, J. A. ..... Brainerd
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Thomas, Geo. H. ..... Minneapolis
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Thoresen, Thor ..... Brooklyn, N. Y.
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Thysell, F. A. ..... Moorhead
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Tiedemann, Elmer J. ..... Adrian
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Tilderquist, D. L. ..... Duluth
Tilton, Albert J. ..... Alden
Tingdale, A. C. ..... Minneapolis

Tofte, Josephne.....Dawson
Torkelson, P. T.....Lyle
Traeger, C. A.....Faribault
Tregilgas, H. R.....South St. Paul
Trutna, Thos. J.....Silver Lake
Tunstead, Hugh J.....Minneapolis
Tuohy, E. L.....Duluth
Turnacliff, D. D.....Minneapolis
Turnbull, F. M.....Duluth
Turnbull, Robert.....Fosston
Tuttle, Thos. D.....St. Paul
Tweedy, G. J.....Winona
Tyrrell, C. C.....Minneapolis

Ude, Walter H.....Minneapolis
Ulrich, Henry L.....Minneapolis
Undine, Clyde A.....Minneapolis
Urberg, S. E.....Duluth
Utley, J. D.....Montrose, Calif.

Vadheim, A. L.....Tyler
Vail, James B.....Henning
Valentine, W. H.....Tracy
Van de Steeg, Wm. G.....Biwabik
Van Slyke, Chas A.....St. Paul
Van Valkenburg, B. F.....Long Prairie
Van Valkenburg, F. W.....Long Prairie
Veirs, Dean.....St. Paul
Veirs, Ruby S.....St. Paul
Vercellini, C. E.....Duluth
Viecelli, James D.....Rochester
Vigen, J. G.....Fergus Falls
Vik, Melvin.....Onamia
Vinson, P. P.....Rochester
Vogel, Joseph.....New Ulm
Vogtel, Melvin A.....Minneapolis
Vollum, E. O.....Albert Lea
Von Berg, J. P.....Albert Lea
Von der Weyer, Wm.....St. Paul
Von Lackum, W. H.....Rochester
Voyer, Emile O.....Minneapolis
Vrooman, F. E.....St. Francis

Waas, Charles W.....St. Paul
Wagener, H. P.....Rochester
Wald, R. H.....St. Paul
Waldron, Carl W.....Minneapolis
Walker, A. E.....Duluth
Walker, G. H.....Winona
Walker, R. E.....St. Paul
Waller, Joseph D.....Wilmont
Wallinga, John H.....St. Paul
Walters, H. W.....Rochester
Wanous, E. Z.....Minneapolis
Ward, A. W.....Minneapolis
Ward, Percy A.....Minneapolis
Warham, T. T.....Minneapolis
Warner, E. F.....St. Paul
Warnock, R. W.....St. Paul
Warren, C. L.....Brewster
Warren, E. I.....St. Paul
Warren, F. S.....Faribault
Warwick, Margaret.....St. Paul
Watson, A. M.....Royalton
Watson, F. G.....Worthington
Watson, I. A.....Minneapolis
Watson, John D.....Holdngford
Watson, N. M.....Red Lake Falls
Wattam, G. S.....Warren
Webb, R. C.....Minneapolis
Webber, Edward E.....Proctor
Weber, M. L.....Duluth
Webster, H. E.....Duluth
Weir, J. D.....Beardsley
Weir, J. F.....Rochester
Weirick, Howard R.....Hibbing
Weiser, Geo. B.....New Ulm
Weisman, S. A.....Minneapolis
Weissgerber, L. A.....Brownton
Welch, M. C.....St. Paul
Wellbrock, William L.....Rochester
Wellcome, J. W. B.....Sleepy Eye
Welles, H. J.....Minneapolis
Wentworth, A. J.....Mankato
Werner, O. S.....St. Paul
Westby, Nels.....Madison
Westerman, F. C.....Montgomery
Wethall, A. G.....Minneapolis
Wetherby, Macnider.....Minneapolis
Weum, T. Wm.....Minneapolis
Wheeler, D. W.....Duluth
Wheeler, M. W.....St. Paul
Wheeler, Theodora.....Rochester
Whetstone, Mary S.....Minneapolis
Whitacre, J. C.....St. Paul
Whitcomb, Ed. H.....St. Paul
White, J. S.....St. Paul
White, Robert B.....Rochester
White, S. Marx.....Minneapolis
Whitmore, F. W.....St. Paul
Whitney, A. W.....St. Paul
Whitten, Merritt B.....Rochester
Wickham, Mont. C.....Rochester
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Wilcox, Archa E.....Minneapolis
Wilcox, F. L.....Walker
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Williams, Henry L., Jr.....Rochester
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Williams, Leon A.....Slayton
Williams, Robert.....Minneapolis
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Williams, R. V.....Rushford
Williams, Thomas B.....Rochester
Willius, F. A.....Rochester
Wilmot, H. E.....Litchfield
Wilson, Arthur N.....Warroad
Wilson, L. B.....Rochester
Wilson, R. H.....Harmony
Wilson, Warren.....Northfield
Wilson, W. E.....Northfield
Wilson, W. F.....Lake City
Wiltrout, I. Geo.....Oslo
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Winter, J. A.....Duluth
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Wohlrabe, A. A.....Minneapolis
Wohlrabe, Clarence.....Springfield
Wohlrabe, E. J.....Springfield
Wold, K. C.....St. Paul
Wolfe, H. H.....St. Paul
Woltman, H. W.....Rochester
Wood, Douglas F.....Minneapolis
Wood, H. G.....Rochester
Woodworth, Elizabeth.....Minneapolis
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